Eurostat and seasonal adjustment

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Outline

1. Introduction

1.1 The role of Eurostat

1.2 Eurostat and infra-annual statistics

1.3 Focusing on PEEIs

2. PEEIS achievements and ongoing works

2.1 Achievements

2.2 Ongoing works

3. Revised ESS guidelines on seasonal adjustment

3.1 Background

3.2 Why revising the guidelines?

3.3 Main characteristics of the guidelines

Outline

1.1 Introduction: the role of Eurostat

- *Definition of standards, nomenclatures, methods and production rules for the compilation of European statistics*
- *Fostering harmonization across countries to improve the overall quality of European statistics*
- *Ensuring the regular production, free dissemination and appropriate documentation of European statistics*
  - High quality standards
  - Regular quality monitoring

4

1.2 Introduction: Eurostat and infra-annual statistics

- *Continuous growing relevance of infra-annual statistics*
  - Economic statistics in the spotlight

- *Further harmonization challenges in the field of infra-annual statistics*
  - Seasonal adjustment
  - Revision policy
  - Estimation techniques: rapid estimates

- *Enhancing the relevance and clarity of infra-annual statistics*
  - Making clearer relevant signals

1.3 Introduction: focusing on PEEIs

- *Principal European Economic Indicators : PEEIs*
  - A set of most relevant macroeconomic indicators
  - Providing an overall picture of the economic situation
- *Great effort in enhancing PEEIs*
  - Harmonization
  - Timeliness

2. PEEIs achievements and ongoing works

2.1 Achievements

- *ESS guidelines on seasonal adjustment: 2009*
- *ESS guidelines on revision policy: 2013*
- *Regular improvement of timeliness: continuous action*
- *Integrating and complementing official statistics with advanced statistical end econometric techniques: continuous action*

2.PEEIs achievements and ongoing works
2.2 Ongoing works

- *Revised version of the ESS guidelines on seasonal adjustment: under approval*

- *Handbook on seasonal adjustment: to be finalised by spring 2015*

- *Handbook on revision analysis: to be finalised by spring 2015*

2.2 Ongoing works

- *Glossary on rapid estimates: finalised*
- *Handbook on rapid estimates: to be finalised by summer 2014*
- *Handbook on cyclical composite indicators: to be finalised by summer 2014*

3. Revised ESS guidelines on seasonal adjustment

3.1 Background

- *2009 guidelines on seasonal adjustment widely accepted and implemented at ESS level*
- *A recognised international reference for*
  - Statistical officer apprentices in the field
  - Experts of seasonal adjustment
  - Researchers

3.2 Why revising the guidelines?

- *Need for further harmonisation*
  - structure
  - internal logic with the recently adopted guidelines on revision policy
- *Need of providing more directive recommendations on key issues*
- *Need for further guidance in case of economic crisis or unexpected events*
  - General consensus among users

3.2 Why revising the guidelines?

- *Need of going into more details concerning both the pre-treatment and the seasonal adjustment for the sake of clarity and completeness*
  - introducing new items
  - splitting existing items
- *Need for a clearer distinction between methods and software*
- *Need of incorporating the recent changes related to methods and software for seasonal adjustment*

3.3 Main characteristics of the guidelines

- *Guidelines structured in 8 sections*
  - Covering all phases of seasonal adjustment

- *Each section of the guidelines structured in a number of items*
  - Covering various steps within a given phase

- *Items presented within an harmonised template*

13

3.3 Main characteristics of the guidelines

Item structure

- ***Description***: *synthetic presentation of the topic addressing main relevant issues*
- ***Options***: *bulleted list of possible options to be used*
- ***Alternatives***: *ranked alternatives*
    - *a) most recommended*
    - *b) acceptable*
    - *c) to be avoided*

3.3 Main characteristics of the guidelines

- *Achievement in the medium/long-term of the maximum possible consensus on the use of alternative a)*

- *Using alternative b) as an intermediate step to converge to the alternative a)*

- *Considering alternative b) as the target whenever some data specificities or user request prevent the use of alternative a)*

- *Completely eliminating the use of approaches labelled under alternative c)*

3.4 Synthetic table of contents

0 – INTRODUCTION

      ANNEX 1: PRINCIPLES FOR SEASONAL ADJUSTMENT

1 - A POLICY FOR SEASONAL ADJUSTMENT

2 - PRE-TREATMENT

3 - SEASONAL ADJUSTMENT

4 - REVISION POLICIES

5 - ACCURACY OF SEASONAL ADJUSTMENT

6 - SPECIFIC ISSUES ON SEASONAL ADJUSTMENT

7 - DATA PRESENTATION ISSUES

3.5 Principles for seasonal adjustment

- *1) The objectives of seasonal adjustment is to identify and remove seasonal fluctuations and calendar effects which can mask short and long-term movements in a time series and impede a clear understanding of underlying phenomena. Seasonal adjustment is therefore a fundamental process in the interpretation of time series to inform policy making.*

- *2) As seasonal adjustment is performed both at European and Member States levels in several domains, it is important to assure consistency between different seasonal adjustment policies. A general ESS set of principles which should be valid at all levels must be defined and published.*

- *3) Seasonal adjustment policies compliant with the principles must then be defined at Member States and domain levels, taking care of inter-domain constraints, and published. These policies must be as stable over time as possible.*

3.5 Principles for seasonal adjustment

- *4) To avoid misleading results, seasonal adjustment should only be applied when seasonal and/or calendar effects can be properly explained, identified and estimated. Where none of these effects can be identified and estimated, unadjusted and calendar/seasonally adjusted series are identical.*

- *5) The use of regARIMA models is recommended to estimate and remove outliers before estimating the seasonal effect.*

- *6) It is also recommended to use regARIMA modelling to calculate calendar adjustment factors. These calendar adjustment factors should take into account the specificities of national calendars.*

- *7) Seasonally adjusted series should have neither residual seasonality nor residual calendar effects and should show both the full trend-cycle and irregular component.*

18

3.5 Principles for seasonal adjustment

- *8) The quality of seasonally adjusted data must be regularly checked. The results of this monitoring should be made available to the public.*

- *9) A stable and publically available revision policy for seasonally adjusted data must be defined and followed.*

- *10) Seasonally adjusted data should be published with unadjusted data according to an announced release calendar.*

- *11) The recommended methods to seasonally adjust a series are parametric methods based on signal extraction like Seats (Gomez and Maravall, 1996) and semi-parametric methods based on a set of predefined moving averages like Census II X 11 family (Findley et al., 1998) and X-13ARIMA-SEATS.*

3.6 Detailed analysis by item

1 - A POLICY FOR SEASONAL ADJUSTMENT

Item 1.1: Principles for seasonal adjustment and general seasonal adjustment policies

Alternatives *
A) Adopt a general seasonal adjustment policy fully compliant with the principles for seasonal adjustment, specifying at least when and on the base of which methods to perform seasonal adjustment, the need for assessment of the seasonal adjusted data quality, the existence of a stable and publically available revision policy for seasonally adjusted data, the need for dissemination of metadata on the seasonal adjustment process   B) Adopt a seasonally adjustment policy only partially compliant with the principles for seasonal adjustment; exceptions to the general principles are limited to when they are considered unavoidable; those exceptions are documented and efforts are undertaken in order to reduce their impact and their occurrence.   C) No seasonal adjustment policy is adopted, or adoption of a seasonal adjustment policy not compliant with the seasonal adjustment principles.   * A) Best alternative; B) Acceptable; C) To be avoided

3.6 Detailed analysis by item

1 - A POLICY FOR SEASONAL ADJUSTMENT
Item 1.2: The need for domain specific seasonal adjustment policies

Alternatives *
A) Adopt domain specific seasonal adjustment policies fully compliant with the general seasonal adjustment one and harmonised at ESS level
B) Adopt domain specific seasonal adjustment policies only partially compliant with the general seasonal adjustment policy or not harmonised at ESS level. Reasons for the lack of compliance and/or harmonisation should be clearly justified
C) Lack of domain specific seasonal adjustment policies, or domain specific seasonal adjustment policies not compliant with the general seasonal adjustment policy, or not harmonised at ESS level
* A) Best alternative; B) Acceptable; C) To be avoided

3.6 Detailed analysis by item

1 - A POLICY FOR SEASONAL ADJUSTMENT

Item 1.3: Consistency across domain specific seasonal adjustment policies

Alternatives *
A) Adopt domain specific seasonal adjustment policies consistent across domains at national and ESS level
B) Adopt domain specific seasonal adjustment policies, only partially consistent across domains. Reasons for the lack of full consistency should be clearly justified; constant effort to reduce discrepancies and to move towards harmonisation of practices with other domains is performed and monitored
C) Adoption of domain specific seasonal adjustment policies not consistent across domains
* A) Best alternative; B) Acceptable; C) To be avoided

3.6 Detailed analysis by item

1 - A POLICY FOR SEASONAL ADJUSTMENT

Item 1.4: Stability of seasonal adjustment policies

Alternatives *
A) The general seasonal adjustment policy and the domain specific ones are stable over time; when changes are required (new legal acts, new definitions, new methods of estimation, etc.), they should be coordinated as far as possible at ESS level and announced in advance. Important changes of domain specific seasonal adjustment policies at the member state level which are necessary to foster accuracy, to reduce the reporting burden or to fulfil national laws should be preannounced too. Those cases should be combined as far as possible.
B) The general seasonal adjustment policy is stable over time at ESS level. Domain specific seasonal adjustment policies are validated annually, eventually revised and coordinated as far as possible at ESS level
C) Lack of coordination/stability of general seasonal adjustment policy and/or domain specific seasonal adjustment ones.
* A) Best alternative; B) Acceptable; C) To be avoided

23

3.6 Detailed analysis by item

1 - A POLICY FOR SEASONAL ADJUSTMENT

Item 1.5: Dissemination of general and domain specific seasonal adjustment policies

Alternatives *
A) The general seasonal adjustment policy and the domain specific ones are publically available in a ESS standardised format, promptly informing the user of any change
B) The general seasonal adjustment policy and the domain specific ones are publically available; efforts are performed to keep the information up to date in a reasonable delay
C) The general principles for seasonal adjustment and the domain specific seasonal adjustment policies are available only on request or not available at all; changes are eventually communicated with long delay
* A) Best alternative; B) Acceptable; C) To be avoided

3.6 Detailed analysis by item

1 - A POLICY FOR SEASONAL ADJUSTMENT

Item 1.6: Quality framework for seasonal adjustment

Alternatives *
A) Measure quality comprehensively for all the ESS dimensions of statistical output quality. B) Measure quality comprehensively for the quantitative ESS dimensions of statistical output quality, and partially for the qualitative dimensions. C) Measure quality partially (or not at all) for the quantitative ESS dimensions of statistical output quality, and/or not at all for the qualitative dimensions.   * A) Best alternative; B) Acceptable; C) To be avoided

3.6 Detailed analysis by item

2 - PRE-TREATMENT

Item 2.1: General aspects for choosing between detailed and automatic pre-treatment

Alternatives*
A) A detailed non automatic pre-treatment at least once a year for the most important macroeconomic indicators based on RegARIMA models and the best alternatives mentioned in the items of this section. B) Automatic pre-treatment. C) No pre-treatment.   * A) Best alternative; B) Acceptable; C) To be avoided

3.6 Detailed analysis by item

2 - PRE-TREATMENT

Item 2.2: Graphical analysis of the series

Alternatives *
A) A detailed graphical analysis for the unadjusted data and the RegARIMA residuals, based on basic graphs, autocorrelograms, spectra and histograms, is performed for the most important series to be adjusted at least once a year and the related outcomes should be documented. B) A first graphical analysis in the time domain, performed on most important series and, whenever possible, on all of them and the related outcomes should be documented. C) No graphical analysis.   * A) Best alternative; B) Acceptable; C) To be avoided

3.6 Detailed analysis by item

2 - PRE-TREATMENT

Item 2.3: Calendar adjustment

Alternatives *
A) RegARIMA approach, with all pre-tests for number of regressors, length and composition of month, national and religious holiday effects, check of plausibility of effects (sign and size of estimated coefficients), etc. The calendar adjustment should be done for those time series for which there is statistical evidence and an economic rationale for the existence of calendar effects.
B) Regression approach for all calendar effects based on the (provisional) irregular component (e.g. X11Regression included in X-12-ARIMA). The calendar adjustment should be done for those time series for which there is statistical evidence and an economic rationale for the existence of calendar effects.
C) Proportional adjustment, other adjustment or no adjustment at all (when this leaves evidence of calendars effects in the adjusted series).
* A) Best alternative; B) Acceptable; C) To be avoided

3.6 Detailed analysis by item

2 - PRE-TREATMENT
Item 2.4: National and EU/euro area calendars

Alternatives *
A) The use of national calendars is recommended at the Member State level or for European aggregates when an indirect approach is chosen. The use of EU/euro area calendars is recommended when a direct approach is chosen for the seasonal adjustment of European aggregates in particular if national calendar adjusted series are not available, incomplete or of insufficient statistical quality. The calendar information used should be available to the public (at least upon request).
B) Use of default calendars (defined within the tool chosen for seasonal adjustment) complemented by an historical list of national public holidays to be corrected for (through the use of appropriate regressors).
C) Use of default calendars, without any reference to national and European public holidays, as well as no calendar adjustment irrespective of diagnostic evidence of calendar effects.
* A) Best alternative; B) Acceptable; C) To be avoided

3.6 Detailed analysis by item

2 - PRE-TREATMENT

Item 2.5: Choosing the frequency of time series for calendar adjustment

Alternatives *
A) Use the highest frequency available for estimating calendar effects and derive lower frequency calendar adjusted results.
B) Estimate quarterly calendar adjusted figures directly and derive annual calendar adjusted figures indirectly.
C) Do not calendar adjust quarterly data, irrespective of whether such effects exist. Adjust annual figures directly.
* A) Best alternative; B) Acceptable; C) To be avoided

3.6 Detailed analysis by item

2 - PRE-TREATMENT
Item 2.6: Other calendar related and weather effects

Alternatives *
A) Only calendar and seasonal effects are adjusted (no additional bridging day, school holiday and weather-induced effects). Studies on the latter effects, however, are done in order to inform data users. **B)** Estimate these effects and delete them from the unadjusted data in order to better estimate seasonal and calendar factors which are not influenced by these effects. (Then, results are produced which are only adjusted with these normal seasonal and calendar factors.) **C)** Adjust for as many effects as possible. * A) Best alternative; B) Acceptable; C) To be avoided

3.6 Detailed analysis by item

2 - PRE-TREATMENT

Item 2.7: General principles of outlier detection and correction

Alternatives *
A) The series should be checked for outliers of different types (see description). Once identified, outliers caused by data errors should be corrected in the unadjusted (raw) data before pre-treatment. Remaining outliers should be explained/modelled using all available information. Outliers for which a clear interpretation exists (e.g. strikes, consequences of changes in government policy, territory changes affecting countries or economic areas, etc.) are included as regressors in the model, even if their effects are somewhat below the general significance threshold. B) As A), but with a completely automatic procedure for detecting and correcting outliers. C) No preliminary treatment of outliers. * A) Best alternative; B) Acceptable; C) To be avoided

3.6 Detailed analysis by item

2 - PRE-TREATMENT

Item 2.8: Treatment of outliers at the end of the series and at the beginning of a major economic change

Alternatives *
A) Outliers are modelled at the end of a time series based on statistical criteria and economic information, especially in times of strong economic changes.   **B)** Using fully automatic outlier detection procedures   **C)** Never model outliers at the beginning/end of a series   * A) Best alternative; B) Acceptable; C) To be avoided

3.6 Detailed analysis by item

2 - PRE-TREATMENT
Item 2.9: Model selection

Alternatives *
A) Selection of a model from a large number of models, after checking for model adequacy using standard statistical tests (e.g. normality, heteroskedasticity, serial correlation, etc.) and spectrum diagnostics for the model residuals. Using non automatic model selection for important or problematic series. B) As before, but with a completely automatic procedure. C) Selection based on restricted number of pre-defined models that have not been tested for adequacy with the set of series being adjusted.   * A) Best alternative; B) Acceptable; C) To be avoided

3.6 Detailed analysis by item

2 - PRE-TREATMENT

Item 2.10: Decomposition scheme

Alternatives *
A) Automatic decomposition scheme selection using appropriate criteria (e.g. information criteria) after graphical inspection of the series. Special investigations for series with zeros or negative values (i.e. adding a constant before testing for the decomposition scheme and checking the impact on the seasonally adjusted series). Use of non-automatic selection for more problematic series. B) Fully automatic decomposition scheme selection using information criteria. C) Use of fixed decomposition scheme (e.g. multiplicative for positive series, additive for series with zeros or negative values).   * A) Best alternative; B) Acceptable; C) To be avoided

3.6 Detailed analysis by item

3 - SEASONAL ADJUSTMENT

Item 3.1: Choice of seasonal adjustment approach

Alternatives *
A) The signal extraction method based on an ARIMA modelling of the series and/or the semi-parametric method based on a predefined set of symmetric moving averages should be used for seasonal adjustment. The choice between the methods should take into account statistical investigations and past practices.
B) Use of unobserved component methods based on state space models provided they allow for a complete calendar and outlier treatment and include an adequate set of diagnostics
C) Use of other methods
* A) Best alternative; B) Acceptable; C) To be avoided

3.6 Detailed analysis by item

3 - SEASONAL ADJUSTMENT
Item 3.2: Choice of the software

Alternatives *
A) Using freely available up-to-date official open-source software which fully contains the various recommended methods, follows a clear release strategy and is heavily tested, such as X-13ARIMA-SEATS, TSW+ or software packages officially approved at ESS level and implementing recommended methods.   B) Using complete and well tested implementations of the recommended software.   C) Using incomplete or obsolete versions of official software, including Demetra 2.2, or the use of commercial packages based on incomplete, obsolete or unknown versions of official software, or any other software implementing a non-recommended method.   * A) Best alternative; B) Acceptable; C) To be avoided

3.6 Detailed analysis by item

3 - SEASONAL ADJUSTMENT

Item 3.3: Temporal consistency between unadjusted and seasonally adjusted data

Alternatives *
A) In principle do not constrain the seasonally adjusted data to the unadjusted data or the calendar adjusted data over the year, unless strong users' requirements justify the benchmarking. In this case, in the presence of   calendar effects constrain the seasonally and calendar adjusted data to the calendar adjusted data over the year, otherwise constrain the seasonally adjusted data to the unadjusted data over the year. Recognised benchmarking methods preserving short-term movements should be used. B) Do not constrain the seasonally adjusted data to the unadjusted data or the calendar adjusted data over the year. C) Constrain data even in absence of users' requirements; use a benchmarking technique that generates seasonality or a benchmarking technique that do not preserve short-term movements.   * A) Best alternative; B) Acceptable; C) To be avoided

3.6 Detailed analysis by item

3 - SEASONAL ADJUSTMENT

Item 3.4: Direct and indirect approaches

Alternatives *
A) Producers should carefully consider the application of either direct or indirect adjustment and make an informed choice based both on all the mentioned statistical criteria to assess the quality of the adjustment and user demand. The direct approach should be preferred for clarity, especially when component series show similar seasonal patterns. The indirect approach should be preferred where component series show significantly different seasonal patterns. The presence of residual seasonality and calendar effects should be monitored, especially in the indirectly adjusted series. B) The choice follows only user requirements for consistency between lower and higher level aggregates (e.g. additivity). The use of either the direct approach, associated with benchmarking techniques to remove discrepancies, or the indirect approach is acceptable. The presence of residual seasonality and calendar effects should be monitored, especially in the indirectly adjusted series. C) Choosing either direct or indirect approach without any justification.
* A) Best alternative; B) Acceptable; C) To be avoided

3.6 Detailed analysis by item

3 - SEASONAL ADJUSTMENT

Item 3.5: Different seasonal filters for different months/quarters

Alternatives *
A) Information about state and development of period-specific causes of the seasonal figure is actively acquired. Together with monthly/quarterly moving seasonality ratios and graphical analysis it forms the basis for the decision on the use of period-specific seasonal filters, at least for the adjustment of important macroeconomic aggregates.
B) Available information about state and development of period-specific causes of the seasonal figure as well as monthly/quarterly moving seasonality ratios and graphical analysis form the basis for the decision on the use of period-specific seasonal filters, at least for the adjustment of major macroeconomic aggregates.
C) Available information about special developments of the seasonal figure is not considered for seasonal adjustment.
* A) Best alternative; B) Acceptable; C) To be avoided

40

3.6 Detailed analysis by item

4 - REVISION POLICIES

Item 4.1: General revision policy and release calendar

Alternatives *
A) Revisions to seasonally adjusted data are published in accordance with a coherent, transparent and officially published revision policy and release calendar, that is aligned with the revision policy and the release calendar for the unadjusted data. Revised seasonally adjusted data should not be released more often than unadjusted data. The public is informed about the size, direction and volatility of past revisions of important seasonally adjusted macroeconomic variables.
B) Revisions to seasonally adjusted data are published in accordance with a coherent, transparent and officially published revision policy and release calendar.
C) No revision of seasonally adjusted data, absence of a clear and public revision policy, absence of a public release calendar, or policies leading to the publication of misleading information especially for the current period
* A) Best alternative; B) Acceptable; C) To be avoided

3.6 Detailed analysis by item

4 - REVISION POLICIES

Item 4.2: Concurrent versus current adjustment

Alternatives *
A) When past data are revised for less than two years and/or new observations are available, partial concurrent adjustment is preferred to take into account the new information and to minimise the size of revisions due to the seasonal adjustment process.   However, if the seasonal component is stable enough, controlled current adjustment could be considered to minimise the frequency of revisions. In this case, a full review of all seasonal adjustment parameters should be undertaken at least once a year.   When revisions covering two or more years occur (as observed in national accounts) model, filters, outliers and regression parameters have to be re-identified and re-estimated.   B) Current adjustment with a full review every year   C) Current adjustment without annual review as well as concurrent adjustment   * A) Best alternative; B) Acceptable; C) To be avoided

3.6 Detailed analysis by item

4 - REVISION POLICIES

Item 4.3: Length for routine revisions

Alternatives *
A) A starting date for the earliest revision of the seasonally adjusted data should be set at the beginning of a year, three years before the revision period of the unadjusted data. This date should be kept fixed for up to five years. Statistical agencies should periodically investigate for the existence of breaks in the revised series. When breaks are detected, statistical agencies can decide to reset the starting date. B) Revise the whole time series. C) Do not revise seasonally adjusted data when unadjusted data are revised, or revise for a shorter period than the revision period of the unadjusted data plus three years.   * A) Best alternative; B) Acceptable; C) To be avoided

43

3.6 Detailed analysis by item

4 - REVISION POLICIES

Item 4.4: Length for major revisions

Alternatives *
A) In situations where the unadjusted data are substantially revised, the seasonally adjusted series should be revised accordingly. If major methodological breaks in the unadjusted data occur, the seasonal adjustment should appropriately account for the methodological break; when there is a change in the seasonal adjustment methodology or software, the need to revise the whole time series has to be carefully considered; users are informed in advance when a major revision will take place.
B) Revise the whole time series in case of major revisions or when there is a change in the seasonal adjustment methodology; users are informed in advance when a major revision will take place.
C) The impact of a major revision is not checked, or the seasonally adjusted data are revised for a period shorter than the one of the unadjusted data, or no revision of seasonally adjusted data is performed in the case of a major revision of unadjusted data; users are not informed in advance that a major revision will take place.

* A) Best alternative; B) Acceptable; C) To be avoided

3.6 Detailed analysis by item

5 - ACCURACY OF SEASONAL ADJUSTMENT

Item 5.1: Validation policy for seasonal adjustment

Alternatives *
A) Use a detailed set of graphical, descriptive, non-parametric and parametric criteria, across statistical packages if necessary, to validate the seasonal adjustment. If validation fails, repeat the seasonal adjustment process in order to solve the problem (if possible). B) Use only default criteria included within the software used for seasonal adjustment. If validation fails, repeat the seasonal adjustment process in order to solve the problem (if possible). C) No validation of seasonal adjustment or use of only restricted graphical and descriptive statistics to validate the seasonal adjustment OR Not repeating the seasonal adjustment process if validation fails in cases A) or B) above OR validation of implausible data   * A) Best alternative; B) Acceptable; C) To be avoided

45

3.6 Detailed analysis by item

5 - ACCURACY OF SEASONAL ADJUSTMENT
Item 5.2: Measurement for individual series

Alternatives *
A) Calculate measures for all characteristics, do alternative runs of seasonal adjustment (if necessary), and take decisions based on expert judgement
B) Calculate measures for all characteristics relying on automated decisions rules or calculate measures for some characteristics taking   decisions based on expert judgement
C) Do not calculate measures or calculate measures for some characteristics only relying on automated decisions
* A) Best alternative; B) Acceptable; C) To be avoided

3.6 Detailed analysis by item

5 - ACCURACY OF SEASONAL ADJUSTMENT

Item 5.3: Comparison of alternative approaches/strategies

Alternatives *
A) Calculate all common measures making decisions on approaches/strategies based on expert judgement. B) Calculate all common measures making automated decisions on approaches/strategies or calculate some common measures making decisions based on expert judgement. C) Calculate no measures or calculate some common measures relying on automated decisions of approaches/strategies.   * A) Best alternative; B) Acceptable; C) To be avoided

3.6 Detailed analysis by item

6 - SPECIFIC ISSUES ON SEASONAL ADJUSTMENT

Item 6.1: Seasonal adjustment of short and very short time series

Alternatives *
A) Perform seasonal adjustment of very short series by using standard tools conditional to the availability of reliable back-calculated series. Short time series must be seasonally adjusted by using standard tools with a more frequent parameter review. Enhanced stability of short seasonally adjusted series can often be achieved by means of back-calculation. Users should be informed about problems related to the seasonal adjustment of short and very short time series.
B) Do not perform any seasonal adjustment of very short time-series; seasonal adjust short time series by means of standard tools with a more frequent parameter review.
C) Use of non-standard methods for very short time series or merely automatic use of standard methods for short ones.
* A) Best alternative; B) Acceptable; C) To be avoided

48

3.6 Detailed analysis by item

6 - SPECIFIC ISSUES ON SEASONAL ADJUSTMENT

Item 6.2: Seasonal adjustment of long time series

Alternatives *
A) Perform the seasonal adjustment on partially overlapping sub-periods, each possibly longer than seven years, selected by means of tests and graphical inspection. Link the seasonally adjusted data of each sub-period by using the information from overlapping parts to avoid breaks. Freeze the seasonally adjusted data of former sub-periods and regularly update the seasonally adjusted data of the current sub-period.
B) Perform the seasonal adjustment by sub-periods identified by either a simple, equal-length, cut rule or any subjective evaluation. Freeze the seasonally adjusted data of former sub-periods and regularly update the seasonally adjusted data of the current sub-period.
C) Perform the seasonal adjustment on the whole time series, using a unique set of settings and parameters, or only over the most recent period of the series.
   * A) Best alternative; B) Acceptable; C) To be avoided

49

3.6 Detailed analysis by item

6 - SPECIFIC ISSUES ON SEASONAL ADJUSTMENT

Item 6.3: Treatment of problematic series

Alternatives *
A) Seasonal adjustment is performed for problematic series. A case by case approach to seasonal adjustment is preferred to an automatic one. The literature, the manuals and experts should be consulted in order to develop a solution. Users should be informed on the adopted strategy. If, even with an individual treatment, a sufficient level of quality of the output series is not achieved no seasonally adjusted series are published.
B) Seasonal adjustment is performed only on relevant problematic series, where failure to adjust these series leads to residual seasonality in important higher level aggregates. Other problematic series are treated in a standard way. If, even with an individual treatment, a sufficient level of quality of the output series is not achieved no seasonally adjusted series are published.
C) Seasonal adjustment is performed in automatic way for all series or seasonal adjustment is not performed at all on problematic series.
* A) Best alternative; B) Acceptable; C) To be avoided

50

3.6 Detailed analysis by item

6 - SPECIFIC ISSUES ON SEASONAL ADJUSTMENT

Item 6.4: Seasonal heteroskedasticity

Alternatives *
A)Examination for seasonal heteroskedasticity using hypothesis testing, graphs and information on the causes of seasonal behaviour and their variability, at least for important macroeconomic aggregates. Taking identified seasonal heteroskedasticity into account in seasonal adjustment and detecting extreme values B) Automatic modelling of seasonal heteroskedasticity dependent on the outcome of a standard test. C) Ignoring the issue.   * A) Best alternative; B) Acceptable; C) To be avoided

3.6 Detailed analysis by item

7 - DATA PRESENTATION ISSUES

Item 7.1: Data availability in databases

Alternatives *
A) Systematic storage of unadjusted data, seasonally adjusted, seasonal adjustment options, prior corrections and trend-cycle data in a central coordinated database with related nomenclatures. Ideally data vintages should be included. Metadata standards should be followed to ensure that all data can be exchanged easily and comply with the Metadata Template (see item 7.3). The database information should be secure but be accessible as required. The principles of ensuring transparency and enabling all users to understand and replicate the seasonal adjustment process should be followed.
B) Systematic storage of unadjusted and seasonally adjusted data with associated metadata identifier. Additional data and metadata required to replicate the process can be stored or documented. The information should be made available on request and should allow for replicating the seasonally adjusted figures.
C) No systematic storage of unadjusted and seasonally adjusted time series.
* A) Best alternative; B) Acceptable; C) To be avoided

3.6 Detailed analysis by item

7 - DATA PRESENTATION ISSUES
Item 7.2: Press releases

Alternatives *
A) Press releases aim to provide news and the figures on which policy is based. Therefore, seasonally adjusted data are the appropriate kind of data to be presented. In addition, users should be provided with directions to the full historical unadjusted, calendar adjusted and trend-cycle time series, by reference and/or by internet download. When presenting trend-cycle estimates the most recent values should not be shown because of the end-point problem. Analysis of real time revision errors of at least the seasonally adjusted estimates should be included.
Period-on-period growth rates and changes in level should be computed on seasonally adjusted data and used with caution if the time series has high volatility. Year-on-year comparisons should be computed on calendar adjusted or, in the case of absence of calendar effects, on unadjusted data.
B) Presentation of seasonally adjusted data and presentation of the trend-cycle in a graphical way which includes estimates for the current end of the series. In this case the end-point problem of the trend-cycle estimate should be made very clear. Year-on-year comparisons could be computed on seasonally adjusted data, in case of strong user demand. Annualised growth rates can also be used, especially for well justified reasons (e.g. for monetary aggregates). Particular attention has to be paid in cases of highly volatile series. Users should be informed of the specific characteristics of annualised growth rates.
C) Presentation of the unadjusted only or trend-cycle data only, as well as the computation of early period to period growth rates on either the raw or trend-cycle data.
* A) Best alternative; B) Acceptable; C) To be avoided

3.6 Detailed analysis by item

7 - DATA PRESENTATION ISSUES

Item 7.3: Documenting metadata for seasonal adjustment

Alternatives *
A) Use the SDMX structure supplemented by the template for seasonal adjustment metadata in the Annex for all groups of series. Update the information using both the SDMX and the seasonal adjustment metadata template regularly to reflect changes in the seasonal adjustment process. B) Use only the SDMX structure, reviewed regularly C) Do not compile any standard metadata   A) Best alternative; B) Acceptable; C) To be avoided

4. Handbook on seasonal adjustment

4.1 Aim

- *Preparing a comprehensive book describing all aspects related to seasonal adjustment*
- *Complementing and integrating the guidelines on seasonal adjustment*
  - Full consistency
  - More technical treatment of various aspects
  - Addressing more research-oriented topics not included in the guidelines
- *Internationally recognized authors*

- *Targeting a larger public than the guidelines*
  - Academics
  - Researchers
  - Students

- *High quality didactical content*

- *Good balance between theoretical considerations and applied ones*

4.2 Structure and content of the handbook

Part I Generalities

Chapter 1*: Introduction. Seasonal Adjustment: objectives, definitions, costs and benefits.*
Estella Bee Dagum, Gian Luigi Mazzi

Chapter 2*: The Seasonal Adjustment Problem.*
Estella Bee Dagum, Gian Luigi Mazzi

Chapter 3*: A History of Seasonal Adjustment*
Olivier Darné, Laurent Ferrara and Dominique Ladiray

Part II Pre-Treatment

Chapter 4: Calendar effects

David Findley and Dominique Ladiray.

Chapter 5: Outliers detection and correction.

Gary Brown, Martin Eiglsperger, Robert Kirchner and Tommaso Proietti

Chapter 6: Transformations and Seasonal Adjustment

Tommaso Proietti and Marco Riani

Part III Seasonal Adjustment

Chapter 7: Model based Seasonal Adjustment.

D. Findley

Chapter 8: Moving Average based Seasonal Adjustment.

D. Ladiray

Chapter 9: *Unobserved components models based Seasonal Adjustment.*

GL. Mazzi, F. Moauro and T. Proietti

Chapter 10: *The main Seasonal Adjustment software.*

David Findley, Andrew Harvey, Siem Koopman and Agustin Maravall

Chapter 11: *Empirical comparison among alternative Seasonal Adjustment methods.*

R. Kirchner and D. Ladiray

Chapter 12: *Seasonal adjustment of short time series.*

GL. Mazzi and R. Gatto

Chapter 13: *Trend-Cycle Estimation.*

E. Bee Dagum

Chapter 14: *Benchmarking and temporal consistency.*

Benoît Quenneville and Susie Fortier

Chapter 15: *Direct vs. Indirect Seasonal Adjustment.*

GL. Mazzi and D. Ladiray

Chapter 16: *Multivariate Benchmarking and reconciliation of seasonally adjusted data.*

Benoît Quenneville and Susie Fortier

Chapter 17: *Revision policy for seasonally adjusted data*

Duncan Elliott, Robert Kirchner, Agustin Maravall and Craig McLaren

Chapter 18: *Quality measures and reporting for seasonal adjustment*

D.Findley,A. Maravall, D. Ladiray and R. Kirchner

Chapter 19: *Data Presentation Issues*

M. Boxall, C. McLaren and M. Zhang.

Part IV Specific Issues on Seasonal Adjustment

Chapter 20*: Improving end-point estimates of Trend-cycle and Seasonally adjusted series.*
M.Grun-Rehomme, F. Guggemos, D. Ladiray and M. Wildi.

Chapter 21*: Seasonal Adjustment of Weekly and Daily Time Series.*
S. Koopman and S. Scott

Chapter 22: *Moving Trading-Day Effects.*
M.Marini, K. Attal-Toubert and D. Ladiray

Chapter 23: *Chain-linking and seasonal adjustment.*
R. Kirchner and M. Scheiblecker

Chapter 24: *The impact of seasonal adjustment on business cycle analysis.*
M.Billio, GL. Mazzi, G.Montana and D.Ladiray

Annexes

Annex 1: *Guidelines for Seasonal Adjustment.*
ECB-Eurostat Steering Group on Seasonal Adjustment

Annex 2: *Glossary.*
ECB-Eurostat Steering Group on Seasonal Adjustment

Annex 3: *Bibliography.*

5. Ad-hoc studies on seasonal adjustment

5.1 Introduction

- *Exploring new directions for seasonal adjustment*
- *Improving existing seasonal adjustment methods*
- *Developing a comprehensive set of statistical measures to evaluate the quality of seasonally adjusted data*
- *Large-scale empirical comparison of seasonal adjustment methods*
- *Effects of seasonal adjustment on business cycle analysis*

5.2 Exploring new directions for seasonal adjustment

- *Unobserved components based seasonal adjustment*
  - State-space representation
  - Variety of specification for each unobserved component
  - Need for a new pre-treatment module consistent with the state-space representation

- *Reg-components methods for seasonal adjustment*
  - Detailed analysis of this approach
  - Special case of the unobserved components approach

5.3 Improving existing seasonal adjustment methods

- *Need to improve end-point estimates of traditional seasonal adjustment methods*
  - Inefficient asymmetric filters
- *Mathematical framework to improve the performance of asymmetric filters*
  - Moving average
  - Model-based
- *Interesting preliminary results*
  - Not yet conclusive
- *Effects on turning points to be investigated*

5.4 Developing a comprehensive set of statistical measures to evaluate the quality of seasonally adjusted data

- *Continuous evolution of quality measures for seasonal adjustment*
  - Often related to most used methods
- *Need to investigate a wide set of measures and tests not related to specific methods*
  - Better comparison among alternative methods
- *Need of quality measures related to specific aspects of seasonal adjustment*
  - Direct versus indirect adjustment
  - Temporal benchmarking
  - Unstable seasonality

5.5 Large-scale empirical comparison of seasonal adjustment methods

- *Developing a large-scale comparison of seasonal adjustment methods*
  - Common set of measures and tests

- *Comparing the performance of the most known seasonal adjustment methods*
  - Short series
  - Opinion surveys

- *Similar performance of moving average and model-based methods*

- *Moving average based methods outperform model-based ones*
  - Short series
  - Opinion surveys

5.6 Effects of seasonal adjustment on business cycle analysis

- *Measuring the impact of alternative seasonal adjustment methods*
  - Coincident turning point indicators
  - Cyclical shapes
- *Other methods than moving average and model-based ones produce quite diverging results*
  - Sometimes misleading or biased
- *Concerning the cyclical shape moving average model-based and state-space methods performing in a similar way*
  - Regression methods fully unsatisfactory

Thank you for your attention.