Australian Bureau of Statistics Guidelines for Presentation and Analysis of Time Series Data

Introduction

1 This paper provides the recommendations from the guidelines for the presentation, analysis and discussion of time series data in Australian Bureau of Statistics (ABS) publications and other products. It is ABS policy to maximize the information available from the data presented and analysed in its publications and products . As explained briefly in Section 2 of this paper and more thoroughly in ABS Catalogue Number 1349.0 A Guide To Interpreting Time Series - Monitoring Trends, time series are complex statistical indicators and extracting the relevant information from them requires sophisticated techniques not available to most users. It is ABS policy to provide users with the most relevant forms of time series to maximize the information available from these statistics.

2 The guidelines give advice on how to achieve this objective by using the most appropriate forms of time series according to the situation, and on how to deal with the different forms of a time series. A full copy of the guidelines can be obtained from the ABS by contacting time.series.analysis@abs.gov.au.

ABS Publishing Standards for Major Economic Indicators

3 Since 1993, the ABS has been progressively revising its major economic indicator publications in line with the recommendations of the Communications Research Institute of Australia (CRIA). These guidelines follow the CRIA recommendations and are supported by the publication assembly system (PAS) that will implement and enforce them. CRIA and PAS provide a rigid framework under which ABS publications are produced; but with discretion and commonsense, there remains the scope to vary the analytical commentary between issues of a particular publication and to tailor commentary to suit the type of publication.

4 Within a standard ABS publication there are several sections in which time series data, under their various forms of trend, seasonally adjusted and original, may be presented and discussed. These may include:

a. key figures/key points;

b. page 2 notes;

c. analysis and comments on principal indicators;

d. tables and graphs;

e. explanatory notes; and

f. warning boxes.

5 The prime objective of the key figures/key points section is to encourage media use of ABS statistics, assist the media in accurately reporting their significant features, and assist other users of statistics (including the general public) by providing a summary of the most significant contents. Other sections of the publication should provide more detailed information and analysis, while providing users with information that will enhance their understanding of the data.

6 These guidelines are composed of four main sections. The first provides a summary of the guidelines' major recommendations. The second describes the primary components of time series data and the issue of data volatility. It also describes the manner in which data should be commented on through text and graphs. The third section examines the issue of provisionality for both trend and seasonally adjusted data and discusses the issue of the reliability of both measures. The final section gives advice for cases when particular problems arise in time series analyses, like abrupt movements or breaks in series.

Recommendations

Emphasising the Trend

7 Because the residual/irregular component has such a large influence on the movements of seasonally adjusted data, the underlying behaviour in the data series is difficult to discern. For this reason, focus on trend estimates in the key points section of publications, rather than on seasonally adjusted estimates.

8 Estimates of trend are the preferred series to emphasize when discussing time series behaviour as key points of publications. The movements of the original and seasonally adjusted series should not generally be emphasized as key points.

Examining Underlying Growth

9 Current trend estimates should be discussed in a manner that places their movements into a historical perspective.

10 Year-apart growth measures should be avoided when discussing directional changes in underlying growth.

Graphs

11 Trend should be plotted together with the seasonally adjusted series from which it was derived.

12 The trend should not normally be plotted with the original (seasonal) series.

13 Major graphs should show about 8 to 10 years of data if contemporary trend behaviour is to be seen within a business cycle perspective

Turning Points

14 Strong claims about the presence of turning points should not be made until a few trend estimates past the prima facie turning point corroborate its existence.

Reliability of Trend and Seasonally Adjusted Data

15 The trend estimate is generally more reliable than the seasonally adjusted series from which it is derived. While the last few trend estimates are subject to revision, they nonetheless generally provide a more timely and reliable indication of the series final trend behaviour than does the movement of the seasonally adjusted series.

16 Even with extremely erratic time series, the percentage-point revisions to the trend will usually be no greater than the annual revisions to the seasonally adjusted series and will last for a considerably shorter time (three months or two quarters depending on the frequency).

Sensitivity Analysis

17 In all cases, a sensitivity analysis should provide information to the user.

18 It is recommended that the range of different presentation formats be reduced to two standardized styles, one for short treatment and another for more in-depth analysis of the trend.

19 The term "sensitivity analysis" is jargon and its use in publications should be avoided.

How to Handle Data Problems

20 When extreme irregular values and sudden changes to trend level or seasonal pattern are known or suspected to have occurred, or thought possible in the near future, the appropriate Client Service Manager of the Time Series Analysis area should be notified immediately and the issue resolved before release of the data.

21 If the magnitude of a trend break cannot be estimated, users may be misled by having analysis refer to either the original or seasonally adjusted movements influenced by such breaks. In such circumstances, clear warnings to readers about these risks should appear in a warning box within the key points section.

Further information

22 For further information on ABS time series analysis practices see the following ABS publications:

Information paper: An Introductory Course on Time Series Analysis - Electronic Delivery, ABS Cat. No. 1346.0.55.001
http://www.ausstats.abs.gov.au/ausstats/free.nsf/0/C2714BAD1DD803E6CA256F960072B0C0/$File/1346055001_jan%202005.pdf

Time Series Analysis Frequently Asked Questions, ABS Cat. No. 1346.0.55.002
http://www.abs.gov.au/AUSSTATS/abs@.nsf/ProductsbyCatalogue/AF6B411C65FBE6B8CA2571090080A510?OpenDocument