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# OECD Short-Term Economic Statistics Expert Group

**Short-term Economic Statistics Expert Group (STESEG):**
**Task Force on Data Presentation and Seasonal Adjustment**

**Task Force proposals for standard terminologies relating to data presentation**

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**Room C**
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*Prepared by members of the Task Force on Data Presentation and Seasonal Adjustment*

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**English - Or. English**

# TASK FORCE PROPOSALS FOR STANDARD TERMINOLOGIES RELATING TO DATA PRESENTATION

## Introduction

Clients of statistical institutions often complain about different terminologies being used to describe the same thing in different publications. Sometimes, the one publication even contains different terms describing the same phenomenon. There are two ways of looking at this: the first is to say that because so many institutions use slightly different terms to describe the same phenomenon, it is acceptable to use different terms interchangeably. The second way is to say that terminology should be consistent across the institutions so that the question of ambiguous terms does not arise. It is this second view that forms the basis of this paper.

Moreover, assuming that users of statistical information can be grouped into the three broad categories of general public, informed users and analytic users, we need to consider how the needs of these different categories are affected by terminology that is unclear. While the general public may not understand what is meant by say, sampling error, the informed user and the analytic user will probably have a reasonable understanding of the term. Even if they do not have such an understanding, glossaries such as the OECD Glossary of Statistical Terms (http://cs3-hq.oecd.org/scripts/stats/glossary/index.htm) contain definitions that can explain terms which are of interest only to the more informed user of statistical data.

Therefore this paper is concerned primarily with terms that may give rise to presentational misunderstandings on the part of all users. This is contained in Part 1. However, to the extent that members of the Task Force considered the OECD Glossary of Statistical Terms in need of revision or to have additional definitions included to assist better the informed user and the analytic user, these recommendations are also included in Part 2.

## Problem Terms

### *Annual Growth Rate*

The OECD Glossary of Statistical Terms states:

> *Annual growth rates are rates expressed over the corresponding period of the previous year. May be expressed as annual growth rates (i.e. $Y_t/Y_{t-1}-1$) or through the year growth rate (i.e. $Q_t/Q_{t-4}-1$ or $M_t/M_{t-12}-1$).*
>
> *Are referred to in the OECD Main Economic Indicators publication as the "12-month (4-quarter) rate of change" in explanatory notes but as "12-month variation" in the actual tables.*

Thus the OECD is using four terminologies to describe the annual growth rate. To these we could also add the term year-on-year change, giving a fifth. Moreover, past discussions with a few OECD clients who have expressed some confusion suggest that annual growth rate may sometimes be taken to mean $Y_t/Y_{t-1}-1$ rather than, say, $Q_t/Q_{t-4}-1$ or $M_t/M_{t-12}-1$.

***Proposal***

To avoid the confusion that may arise over the use of the word "annual", it is proposed that statistical institutions should do the following

- Use "year-on-year growth rate" ("year-on-year change") when describing $Q_t/Q_{t-4}$-1 or $M_t/M_{t-12}$-1 ($Q_t$-$Q_{t-4}$ or $M_t$-$M_{t-12}$) and use "annual growth rate" ("annual change") only when describing $Y_t/Y_{t-1}$-1 ($Y_t$-$Y_{t-1}$)

This allows the use of the terms "quarterly growth rate" for $Q_t/Q_{t-1}$-1 and "monthly growth rate" for $M_t/M_{t-1}$-1.

***Annualised Growth rate***

The OECD Glossary of Statistical Terms states:

> *Annualised growth rates show the value that would be registered if the rate of change measured for a month or quarter were maintained for a full year, i.e.* $[((Q_t/Q_{t-1})^4)-1]$, $[((M_t/M_{t-1})^{12})-1]$. *This facilitates comparison of data for different time periods (e.g. years and quarters).*

This definition is fairly clear. However, the term "annualised growth rate" is sometimes used to describe the quarterly growth rate multiplied by four as opposed to compounding the quarterly growth rate. On the other hand, "annual rate" or "annual levels"[1] are also used to describe the situation whereby quarterly data are expressed on an annual basis.

In addition, the definition refers to annualising from monthly rates of activity, which is something that many people feel to be inappropriate.

***Proposal***

To avoid confusion over the use of annualised and annual, it is proposed that

- The Term "annualised" should be used when data derives from compounding and "linear approximation of the annualised figure" should be used when data derives from multiplying by four
- As it is generally agreed that annualising for monthly series is not particularly appropriate since annualising the growth rate of a single month could, if the growth in that month was exceptional, provide false expectations regarding growth rates, a reference to its non-suitability should be inserted in the OECD Glossary.

***Calendar or Working Day Adjustment***

The OECD Glossary of Statistical Terms states:

> *Seasonal adjustment is a statistical technique to remove the effects of seasonal calendar influences operating on a series. Seasonal effects usually reflect the influence of the seasons themselves either directly or through institutional factors or social conventions.*

[1] See for instance, the OECD publications, *Main Economic Indicators* and *Quarterly National Accounts*.

*Other types of calendar variation occur as a result of influences such as number of days in the calendar period, the accounting or recording practices adopted or the incidence of moving holidays (such as Easter).*

There is no problem with seasonal adjustment, even if it includes calendar effects, again as long as the general public are given a brief explanation as to what it means.

Calendar adjustment is not defined in the OECD Glossary of Statistical Terms but might be defined as

*The correction for calendar variations other than seasonal factors, e.g. number of days in the calendar period, the accounting or recording practices adopted or the incidence of moving holidays (such as Easter).*

The terms "calendar adjustment" and "working day adjustment" appear to be used interchangeably. This seems particularly so when it comes to translating different languages into English. However, there is a subtle difference between the two terms as defined above since working day adjustment is merely one type of calendar adjustment, along with an adjustment for, say, new recording practices. Although the difference may be subtle, at least it should be considered whether this difference should be stated explicitly.

***Proposal No. 1***

To avoid the possibility of users mistakenly thinking that "calendar adjustment" means "working day adjustment", when it actually means working day plus other adjustments, it is proposed that

- Only the term "calendar adjustments" should be used but with an explanation as to what adjustments are included

***Proposal No. 2***

- The definition of "calendar adjustment" as drafted above should be included in the OECD Glossary of Terms.

***Moving Average***

This is not defined in the OECD Glossary of Statistical Terms but might be defined as

*A moving average is a method for smoothing time series by averaging (with or without weights) a fixed number of consecutive terms. The averaging "moves" over time, in that each data point of the series is sequentially included in the averaging, while the oldest data point in the span of the average is removed. In general, the longer the span of the average, the smoother is the resulting series.*

*Moving averages are used to smooth large fluctuations in time series or to identify time series components, such as the trend, the cycle, the seasonal, etc.*

*A moving average replaces each value of a time series by a (weighted) average of p preceding values, the given value, and f following values of the series.*

*If p = f the moving average is said to be centred.*

*The moving average is said to be symmetric if it is centred, and if for each k=1, 2, …, p = f, the weight of the k-th preceding value is equal to the weight of the k-th following one.*

*The moving average is not defined for the first p and the last f time series values. In order to compute the moving average for those values, the series must be backcasted and forecasted.*

There is no ambiguity in the term moving average but there is no definition in the OECD Glossary of Statistical Terms.

***Proposal***

- The definition of "moving average" as drafted above should be included in the OECD Glossary of Terms.

***Preliminary/Provisional***

It is possible that these words are used interchangeably for the timeliest data subject to revision.

The OECD Glossary of Statistical Terms does not contain a definition for either 'preliminary" or "provisional". However, in the definition for "most timely data", the Glossary refers to preliminary data being subject to revision.[2] There is no reference to provisional data in the Glossary. However, the words can be taken as interchangeable if one uses the Oxford English Dictionary definition for both (although provisional has a wider number of meanings than preliminary).

If some statistical institutions use the term "preliminary" to describe the first released version of a series and "provisional" to describe subsequent versions prior to final amendment, there is obviously a difference between the two meanings. On the other hand, users in general should have no great problem in understanding that data labelled "preliminary" or "provisional" are subject to revision as long as this is clearly highlighted by the agency in the release. The task force considers that clearly informing the user that data are subject to revision is more important than the term used to describe such data.

***Proposal***

- The terminology used to describe data subject to revision is not as important as clearly informing the user of the fact and this should always be highlighted by the agency as a matter of course.

**Terms for revision or inclusion in the OECD Glossary**

There are several terms that are proposed for revision or inclusion in the Glossary.

***Possibly contradictory definitions for "cycle (in time series)" and "oscillation"***

The OECD Glossary of Statistical Terms defines a cycle in a time series as:

*In time series, any periodic variation may be described as a cycle. Often, however, the term is reserved for cycles generated by the autoregressive structure of the series, as opposed to seasonal*

[2] The Glossary states: *Most timely data refers to the direct investment statistics disseminated at the earliest opportunity; that is with the shortest lapse of time between the end of the reference period (or reference date) and dissemination of the data. Although disseminated, such data may be preliminary and subject to revision.*

*variation, caused by outside influences. A disturbance to the series may affect the phase of the cycle in this sense, while a seasonal variation has always the same phase.*

It then describes "oscillation" as

*An oscillation in a time series or, more generally, in a series ordered in time or space is a more or less regular fluctuation about the mean value of the series. In this sense it is to be sharply distinguished from a cycle, which is strictly periodic; thus, while a cyclical series is oscillatory an oscillatory series is not necessarily cyclical.*

It might be considered that the first definition states that a cycle may or may not be periodic whereas the second definition states that it is strictly periodic. However, in the context of seasonal adjustment, cycles are not strictly periodic functions. Therefore we propose an alternative definition for "cycle (in time series)". This would be

*The smooth variations around the trend revealing a succession of phases of expansion and recession. The cyclical component can be viewed as those fluctuations in a time series which are longer than 1½ years but shorter than those attributed to the trend.*

***Proposal No. 1***

- That the alternative definition of "cycle (in time series)" as drafted above be included in the OECD Glossary.

***Proposal No. 2***

- The definition of "oscillation" in the OECD Glossary should be deleted.

***Seasonal Variation***

The OECD Glossary of Statistical Terms defines seasonal variation as:

*In any time series, that part of the movement which is assigned to the effects of the seasons on the year.*

It is proposed that the definition be amended to read

*Seasonal variation (seasonal component):*

*That part of the variations in a time series representing intra-year fluctuations that are repeated more or less regularly in the same period year after year.*

***Proposal***

- That the definition of "seasonal variation" be amended as above in the OECD Glossary.

***Time Series***

The OECD Glossary of Statistical Terms defines a time series as:

*A time series is a set of ordered observations on a quantitative characteristic of an individual or collective phenomenon taken at different points of time.*

It is proposed that the definition be amended to read *"…a set of time-ordered observations…"* since ordered means ranked in size order.

***Proposal***

- That the definition of "time series" be amended as above in the OECD Glossary.

***Trend***

The OECD Glossary of Statistical Terms defines trend as:

> *A long term movement in an ordered series, say a time series, which may be regarded, together with the oscillation and random component, as generating the observed values.*

Given that oscillation should be deleted from the OECD Glossary, it is proposed therefore that the definition be amended to read

> *The component that represents the long-term variations in a time-series. Trend can be viewed as those variations of very low frequencies.*

***Proposal***

- That the definition of "trend" be amended as above in the OECD Glossary.

***Inclusion of New Terminologies in the Glossary***

It is proposed that all the unobserved components of a time series should be defined in the Glossary. Therefore the following definitions are proposed for inclusion. They are based on Ladiray-Quenneville, Springer Lecture Notes in Statistics 2001 and Kaiser-Maravall, Springer Lecture Notes in Statistics 2001, Harvey, MIT Press 1993, 2nd ed.

***Proposal No. 1***

> *Calendar effects component:*
>
> *The component that represents the calendar variations in a time series, such as trading days, moving holidays and other calendar effects (such as leap year). The effects of the normal length of a month are assigned to the seasonal component.*

***Proposal No. 2***

> *Irregular component:*
>
> *The irregular component is what is left of a time series after the trend-cycle and the seasonal components, as well as the calendar effects have been removed; it corresponds to the high frequency fluctuations of the series.*

***Proposal No. 3***

> *Seasonally adjusted component or series:*

*The result of the extraction of the seasonal component and the calendar effects component from a time series. If neither seasonal nor calendar influences are present in the raw data, the seasonally adjusted series is given by the raw data. For series with no identifiable seasonal variations but with identifiable calendar variations, the seasonally adjusted series is given by the calendar adjusted series.*

***Proposal No. 4***

*Trend-cycle:*

*The trend-cycle is the component that represents the variations of low frequencies in a time series, the high frequency variations having been filtered out. This component can be viewed as those variations whith a period longer than a chosen threshold (usually 1½ years). In practice, statistical agencies estimate trend-cycle by filtering the seasonal and irregular component.*