

# Quality measures for economic indicators



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# Quality measures for economic indicators

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## Abstract

Eurostat compiles on a regular basis European Union and Euro zone infra-annual economic statistics relevant for short-term economic analyses. Among these, a list of 19 indicators, called Principal European Economic Indicators (PEEIs), has been identified by key users as of prime importance for the conduction of economic and monetary policies for the Euro zone. These indicators are mainly released through the Euroindicator website.

Eurostat has always put much effort on making these statistics promptly available, reliable, and harmonised for a sufficiently long time period. However, progresses achieved need to be closely monitored by producing in a systematic way a set of user-oriented quality measures.

In recent years, Eurostat has defined a quality framework focusing on the quality of output. Users and their needs are at the centre of this quality framework. It has been stressed that data quality is made-up of six dimensions: relevance, accuracy, timeliness and punctuality, accessibility and clarity, comparability, and coherence. Accordingly, up to now standard quality reports have been defined together with a list of quality measures.

Taking into account the time series nature of PEEIs and the urgent need to regularly monitor the quality of PEEIs database, the paper proposes a limited list of quality indicators (four out of the six mentioned above) to be used on a regular basis, easy to be implemented and giving users a clear and up-to-date overview of the state of quality of short-term statistics, changes with respect to the recent past and future prospects.

This paper aims at making a bridge between the need for a practical framework to assess the quality of economic indicators and the general quality framework developed within the European Statistical System (ESS). Further, the paper provides an alternative understanding of the basic dimensions. For instance, accuracy is handled focusing on revision analysis. Examples for three of the most important indicators (Harmonised Consumer Price Index, Quarterly National Accounts, Industrial Production Index) are provided.

*Keywords:* Measuring Quality; Quality reporting; Quality indicators

## 1. Introduction

Eurostat compiles European Union and Euro zone infra-annual economic statistics relevant for short-term economic analysis. Among these, a list of 19 indicators, called Principal European Economic Indicators (PEEIs)<sup>1</sup>, has been identified by the key users as of prime importance for the conduction of monetary and economic policy of Euro zone. These indicators are mainly released through the Euroindicator<sup>2</sup> website.

Among the six dimensions of quality defined by Eurostat, the PEEIs users put particular importance on timeliness and accessibility of these indicators. The Ecofin Council said, for instance, that Euro zone statistics should attempt to emulate US standards in this respect.

Considerable progresses have been made over recent years on these indicators, but these have to be systematically monitored and measured. Then, much effort has been dedicated by Eurostat in the definition and implementation of a limited set of quality indicators for the PEEIs to be readily and regularly produced. The quality indicators should be user-oriented, meaning that users should have the possibility to see the extent and nature of progresses made.

Eurostat has defined a quality framework focusing on the quality of the output. Data quality is made up of six dimensions: relevance, accuracy, timeliness and punctuality, accessibility and clarity, comparability, and coherence. Standard quality reports have been defined together with a list of standard producer oriented quality indicators.

However, the particular nature of the economic indicators does not allow implementing all the standard measures. By essence, the economic indicators are measured at regular point in time and constitute thus time series. In addition, the time pressure to compile them implies very often the use of ‘non-standard’ survey methodology such as estimation of missing macro component, the use of econometric model combining survey results and exogenous information, the use of shortcut in the collection process (early respondent sample, ...). Finally, the removal of periodic components (seasonality, trading day effect, ...) requires frequently further processing.

The current proposal aims at making a bridge between the needs for a practical framework to assess the quality of PEEIs and the general quality framework developed by the European Statistical System. In addition, the indicators chosen need to shed light upon a trade off between timeliness and other dimensions. Improved timeliness is not an unconditional objective and is very often based on a trade off with accuracy. However, given the particular nature of PEEIs and the need to define quality indicators readily and easily computable, we will concentrate our attention on four out of six quality dimensions:

- Relevance
- Accuracy
- Timeliness
- Accessibility and clarity

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<sup>1</sup> See Annex 1.

<sup>2</sup> See [www.europa.eu.int/comm/euroindicators/](http://www.europa.eu.int/comm/euroindicators/).

The paper proposes a list and definitions of quality indicators for PEEIs, together with example computed for three of them: the Harmonised Consumer Price Index (all items), first and final GDP estimate and Industrial Production Index (total). They are presented along the four quality dimensions mentioned above. These quality indicators will be regularly presented by Eurostat in a PEEIs regular quality report. It will include meta-information on the methodology of such indicators.

The structure of the paper is as follow: Section 2 will present the quality measures for PEEIs; Section 3 will contain the statistical definition of the measures and some applications to the real data extracted from the Euro-IND database; Section 4 will conclude.

## **2. Quality measures for PEEIs**

The proposed key quality indicators, concentrated to four quality components, are presented in table 1. Relevance measures the degree of satisfaction of user needs. In absence of costly user satisfaction index, which would have been the most efficient user oriented indicator, the relevance dimension is characterised by the completeness of database along two well separated axes:

- 1) the ‘transversal’ completeness analysing the coverage of the database over the PEEIs domains. Given that the PEEIs list and breakdown have been defined according to user needs, the indicator for relevance is obtained by the rate of available statistics (see § 3.1);
- 2) the time completeness of the indicators. Users require sufficient long series to carry out economic analysis (15 years has been retained by Eurostat as the minimum requirements for infra-annual statistics). The time span of series is studied in the second indicator (see § 3.2) using different windows size allowing picking up a more precise picture of the time dimension of the database.

Accuracy should ideally be characterised by mean square error of estimates. Standard approaches aim to characterise sampling errors, on one side, and non sampling errors by coverage, measurement, processing and non response measures, on the other side.

This scheme is hardly applicable here for the following reasons:

- 1) short-term indicators are rarely obtained according to standard textbook procedure and thus the standard errors of the index are hardly known;
- 2) measurement and processing errors are rarely monitored during the production phase because of the tight production delays;
- 3) non response might not be the most appropriate measure of reliability because it is at the centre of the timeliness-accuracy trade off. Preliminary estimates are very often produced with early respondents and thus with a reduced response rate. Timeliness implies often lower response rate.
- 4) population coverage measures relying on business register analysis are very not often available.

When available, these measures can however adequately complement the indicator considered here after.

However, the specific nature of short-term indicators makes difficult finding a different approach to characterise accuracy. Indeed, because of the timeliness pressure, short-term indicators are very often released in a preliminary version followed by revised and final figures. These revisions can be seen as the realisation of a stochastic process whose properties are intrinsically linked to the accuracy of the estimates. The study of the size and direction of revisions can, for instance, serve to assess the lack of any persistent or predictable biases. In absence of bias, i.e. conditional to the hypothesis that the final release is the true or best prediction, the study of the volatility of the revision process can provide a measure of the accuracy of the estimates. It gathers several factors like sampling or non response mechanism when early estimates rely on sub- or early-respondent sample. It encompasses effects of the processing and measurement when early estimates are produced by short cutting non automatic checks on the opposite of final releases.

Finally, it is inevitably influenced by the forecast errors when missing components are estimated. Revision analysis provides thus a key tool for assessing the trade off between timeliness and accuracy. In addition, revision analysis is very close to user perception of reliability and accuracy. The paper presents indicators of the volatility of the revision process (see § 3.5). The number of revisions (see § 3.4), considered here as a separate indicator, may complement them adequately. Although not directly linked to accuracy, it measures the coherence of national release policies, which is an important factor of European figures reliability.

In a European perspective, coverage error can be adequately characterised by “geographical” coverage (see § 3.3) expressed by the economic weight of the Member States whose indicators contribute to the European aggregate.

Timeliness is the main requirement from the users point of view. Users require data as soon as possible. Moreover, they expect the publication calendar published by Member States is respected. Finally, the expectation of a user consulting a database is to find information as recent as possible.

This dimension is easily monitored by them. The paper presents three indicators related to timeliness: a) punctuality (see § 3.6); b) time lag between end of the reference period and availability of results (see § 3.7); c) freshness, complementary dimension focusing on the user of the database (see § 3.8).

Accessibility (see § 3.9) is measured by the number of download of the database. This indicator is not an absolute measure of accessibility but rather a measure of evolution of the accessibility: a constant increase of the access is a good indicator of improvement of accessibility.

The clarity is highly linked to the availability of relevant meta-information. Euroindicators website uses the SDDS standard for metadata, the clarity can thus be easily assessed by the completeness of the available SDDS files (see § 3.10).

**Table 1: Proposed key pilot quality indicators**

Quality component	Proposed indicators
Relevance	R1. Rate of available statistics over series
	R2. Length of series
Accuracy	A1. Geographical coverage
	A2a. Number of revisions
	A2b. Relative size of revisions
Timeliness	A2c. Absolute size of revisions
	T1. Punctuality of time schedule of effective publication
	T2. Average time between the end of reference period and the date of the first results
Accessibility and clarity	T3. Freshness
	AC1. Number of database accesses
	AC2. Number of PEEIs with SDDS metadata files

Comparability and coherence are not considered here mainly for practical reasons. These dimensions have still to be further worked out in order to be incorporated into a regular monitoring report of the PEEIs. For comparability over PEEIs domains, a simple proposal would be to derive the minimum common length of the series, i.e. the time span over which comparisons could be carried out. Comparability over time could also be assessed through of the number of level break (level shift) in the series due to methodological changes. These could be detected using Reg-ARIMA automatic modelling procedures excluding ex-post breaks in series due to well known economic factors such as the German reunification. A more thoroughly analysis of comparability would encompass a detailed analysis of the production process of the indicators but this is behind the scope of the proposal.

The key indicators of table 1 will be presented in the body of the PEEIs pilot quality report. In addition, supportive indicators might be produced. These could be presented in an annex to the quality report. The suggested quality components and indicators are similar to those considered by the joint ECB/Eurostat TF on Output Quality of Quarterly National Accounts, especially concerning the philosophy of choosing a limited number of quality indicators, simple to calculate and easy to be interpreted.

It is proposed that PEEIs quality reports are produced quarterly. Some PEEIs quality indicators can easily be produced on a monthly basis; these monthly indicators will serve as the basis for *quarterly aggregates* to be presented in the body of the quality report. The production of quality indicators for the EU-15/EU-25 and the Euro zone is prioritised and presented in the body of the quality report. The level of detail for which the quality indicators are computed depends on the indicators. In addition, the indicators should not consider the all time span of the indicators. Time segments are defined for each indicator. For each PEEI the most appropriate evaluation and unit on which the quality analysis should be performed has to be identified. For example when both raw and seasonally adjusted data are available it seems preferable to base the quality monitoring on the second ones in order to reduce the noise and the volatility related to a non-essential component of the data such as the seasonality.



Meta information should supplement the quantitative indicators in the quality reports. Depending on the key quality index, these should include information on:

- results of the last available quality report and differences with respect to current situation
- if applicable, reasons for delays with respect to PEEIs targets
- perspective changes up to the next report
- other indicator-specific meta information, such as reasons for extraordinary revisions (outliers), reasons for changes in trends, results of users' satisfaction surveys, state of convergence of revision policies, ...

### 3. Definitions and applications of quality measures for PEEIs

#### 3.1 Indicator R1: Rate of available statistics over series

##### Definition and derivation

Given the PEEIs and the corresponding segmentations, the indicator is given by the ratio between the number of available indicators and the expected number of indicators. For each PEEI, the maximum (expected) number of available indicators is 25 (15 MS + 10 AC).

##### Frequency

Monthly or quarterly, depending on PEEI.

##### Comment

This indicator evaluates the completeness of PEEIs database as a whole. The availability of statistics should follow closely the *political objectives and the calendar for implementation*. Any departure from it is related to processing problems and should be reduced to the minimum. The index should not take into account the timeliness of the data which will be covered by timeliness indicators.

##### Target

Complete (100%) coverage.

##### Meta information

Results of last quality reports; reasons for departure from the target; n.a. countries; perspective changes.

##### Geographical and time segmentation

MS, AC; no need for time segmentation.

##### **Example**

**Rate of available statistics over series:** Quarterly GDP at constant prices, seasonally adjusted

<b>Indicators</b>	<b>2003</b>
Number of countries (MS+AC)	19
Coverage with respect to 25 target	76.0%

### 3.2 Indicator R2: Length of series

#### Definition and derivation

Number of quarters (months) available at different quarters (months); ratio between the number of available cells of data and the expected number of cells with respect to 5, 10 and 15 years windows. The expected number of cells is given by (number of years)\*(observations/year) for each geographical segmentation.

#### Frequency

Monthly or quarterly, depending on PEEIs.

#### Comment

Fifteen years are considered the time span necessary to have at least two-three complete business cycles for analyses.

#### Target

Complete (100%) coverage.

#### Meta information

Results of last quality reports; reasons for departure from the target; perspective changes.

#### Geographical and time segmentation

EU15, EU25, MS, AC, Euro zone; last 5, 10 and 15 years windows.

#### **Example**

**Length of series:** Quarterly Euro zone GDP at constant prices, seasonally adjusted

<b>Indicators</b>	<b>2002 Q4</b>	<b>2003 Q1</b>	<b>2003 Q2</b>	<b>2003 Q3</b>
Number of quarters/months available	48	49	50	51
Coverage with respect to 15 years target	80.0%	81.7%	83.3%	85.0%
Coverage with respect to 10 years	100%	100%	100%	100%
Coverage with respect to 5 years	100%	100%	100%	100%

### 3.3 Indicator A1: Geographical coverage

#### Definition and derivation

Indicators R1 and R2 weighted in terms of shares of GDP at 1995 constant prices.

#### Frequency

Monthly or quarterly, depending on PEEIs.

Comment

The indicators complement information given by indicators R1 and R2. The threshold of 80% for the total coverage can be used to assess the quality of the PEEIs. The assessment of the 80% threshold would require further studies. Computed only for geographical aggregates.

Target

Complete (100%) coverage.

Meta information

Results of last quality reports; reasons for departure from the target; perspective changes.

Geographical and time segmentation

EU15, EU25, Euro zone; last fifteen years.

**Example**

**Geographical coverage:** Quarterly GDP at constant prices, seasonally adjusted

Indicators	2003
R1 weighted	97.6 %
R2 weighted	93.4 %*

\* Includes data for Germany before 1991

### 3.4 Indicator A2a: Number of revisions

Definition and derivation

Number of times each quarter/month is revised over the last four quarters/twelve months; number of releases per quarter/month; number of cells revised.

Frequency

Monthly or quarterly, depending on PEEIs.

Comment

The indicators give information on the number of cells (months, quarters) routinely subject to revisions backward when new data are released; on the number of estimates given for a certain release (ex. Advance, preliminary and final estimate); on how many times a specific month/quarter has been revised.

Target

Reduction of the time span subject to routine revisions; greater co-ordination of revision policies and practices.

Meta information

Results of last quality reports; state of convergence of revision policies; reasons for extraordinary revisions; perspective changes in policies.

Geographical and time segmentation

EU15, EU25, MS, AC, Euro zone; last 4 quarters or last twelve months.

**Example**

**Number of revisions:** Quarterly Euro zone GDP at constant prices, seasonally adjusted

Indicators	2002 Q4	2003 Q1	2003 Q2	2003 Q3
Number of revisions per quarter	14	11	5	2
Number of releases per quarter	3	4	4	2
Number of cells revised	48	49	50	51

**3.5 Indicator A2b: Absolute and relative size of revisions**

Definition and derivation

Mean absolute and percentage revision errors over revisions of the last year.

Let us indicate with  ${}_r x_t^v$  the value of the time series  $x$  at time  $t$  ( $t = 1, 2, \dots, T$ ) for vintage  $v$  ( $v = 1, 2, \dots, K$ ) and version  $r$  ( $r = 1, 2, \dots, s$ ). Observations pertaining to the same vintage  $v$  are homogeneous in terms of ‘oldness’ and in terms of the information set used to estimate them. Versions are homogeneous in terms of release date, i. e.  $\{ {}_s x_t^v \}_{t=1, \dots, T}$  indicates the last published time series, which is a mixture of different vintages. The statistical analysis of revisions can be carried out both by vintage and version. In the former case we define the following absolute and percentage errors:

$$E_t(m) = x_t^m - x_t^K \qquad e_t(m) = \frac{x_t^m - x_t^K}{x_t^K}$$

where we have omitted the ‘version’ subscript for sake of simplicity and  $m = 1, 2, \dots, K-1$ . We can then compute the following statistics:

$$\begin{aligned} ME &= \frac{1}{n} \sum_t E_t(m) & MPE &= \frac{1}{n} \sum_t e_t(m) \\ MAE &= \frac{1}{n} \sum_t |E_t(m)| & MAPE &= \frac{1}{n} \sum_t |e_t(m)| \\ RMSE &= \sqrt{\frac{1}{n} \sum_t E_t^2(m)} & RMPSE &= \sqrt{\frac{1}{n} \sum_t e_t^2(m)} \end{aligned}$$

where the subscript  $t$  takes all the  $n$  values for which both  $x_t^m$  and  $x_t^K$  are available. If the revision are analysed by version, then the errors are defined as:

$$E'_t(j) = x_{jt} - x_{st} \quad e'_t(j) = \frac{x_{jt} - x_{st}}{x_{st}}$$

for  $j = 1, 2, \dots, s-1$ , omitting for simplicity the “vintage” superscript. Analogous statistics can be computed to summarise the revision errors across versions.

#### Frequency

Monthly or quarterly, depending on PEEIs.

#### Comment

Seasonal adjustment is not taken into account for the measure of revision. It is well known that seasonal adjustment further introduce revision in the output, measure of implied revisions being one of the key aspects of the quality of the seasonal process<sup>3</sup>. However, given the stage of implementation of the PEEIs, it is relevant to concentrate on the raw data where much improvement is expected. At a later stage, seasonal adjustment revision should be included in the statistics.

#### Target

Reduction of size and bias of revisions.

#### Meta information

Results of last quality reports; reasons for extraordinary revisions, if any; brief comments on revision history and characteristics (existence of biases, erratic revisions, ...); perspective changes.

#### Geographical and time segmentation

EU15, EU25, MS, AC, Euro zone; computed over all the time span of the series and over the last three years.

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<sup>3</sup> See for instance J. M. Museux and N. Jukic, Quality report for SA process at Eurostat, *Statistics Canada Symposium*, 2003

### Example

**Absolute and relative size of revisions:** Comparison of final release (31/12/2003) with other releases in the year. Quarterly Euro zone GDP at constant prices, seasonally adjusted. Computations carried out over the whole available sample.

Indicators	1 <sup>st</sup> release	2 <sup>nd</sup> release	3 <sup>rd</sup> release	...	s-1 <sup>th</sup> release	s <sup>th</sup> release	Average revisions
Mean Error	-775.8	-693.9	-724.5	...	26.8	42.5	-356.9
Mean Error %	-0.050	-0.045	-0.047	...	0.002	0.003	-0.023
Mean Absolute Error	1158.2	1078.2	1120.9	...	46.0	61.4	672.1
Mean Abs. Error %	0.079	0.073	0.076	...	0.004	0.003	0.046
Root Mean Squared Error	2007.5	1809.5	1877.3	...	155.6	193.1	1059.5
Root Mean Squared Error %	0.013	0.012	0.012	...	0.001	0.001	0.007

**Absolute and relative size of revisions:** Comparison of final release (31/12/2003) with other releases in the year. Quarterly Euro zone GDP at constant prices, seasonally adjusted. Computed over the last three years.

Indicators	1 <sup>st</sup> release	2 <sup>nd</sup> release	3 <sup>rd</sup> release	...	s-1 <sup>th</sup> release	s <sup>th</sup> release	Average revisions
Mean Error	-3146.5	-2834.7	-3076.3	...	95.2	144.3	-1426.5
Mean Error %	-0.201	-0.181	-0.197	...	0.006	0.009	-0.091
Mean Absolute Error	3146.5	2842.3	3076.3	...	134.3	180.8	1540.6
Mean Abs. Error %	0.201	0.182	0.197	...	0.009	0.012	0.099
Root Mean Squared Error	-	-	-	...	-	-	-
Root Mean Squared Error %	0.001	0.001	0.001	...	0.000	0.000	0.000

%							
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### 3.6 **Indicator T1: Punctuality of time schedule of effective publication**

Definition and derivation

Average delay in days over published time schedule computed over the last year.

Frequency

Monthly or quarterly, depending on PEEIs.

Comment

Punctuality does not deserve any departure. Non-zero values should be rare events. Some MS practices create problems in the evaluation of the index (ex.: releases announced within a certain date).

Target

Zero average delay.

Meta information

Results of last quality reports; reasons for delays with respect to the 0 target.

Geographical and time segmentation

EU15, EU25, MS, AC, Euro zone; last year of releases.

### 3.7 **Indicator T2: Average time between the end of reference period and the date of the first results**

Definition and derivation

Average delay between the date of publication of the indicator and the reference period of the most up to date data.

Frequency

Monthly or quarterly, depending on PEEIs.

Comment

Target

EU delay target as in PEEIs.

Meta information

Results of last quality reports; reasons for delays with respect to EU target; delays with respect to US target.

Geographical and time segmentation

EU15, EU25, MS, AC, Euro zone; last year of releases.

**Timeliness:** Punctuality of time schedule of effective publication (**T1**) and Average time between the end of the reference period and the date of the first

results (T2), Eurozone. Computations carried out on releases from January to December 2003.

Aggregate	T1*	T2
GDP first set of aggregates, Flash estimate <sup>1</sup>	0	44.3
GDP first set of aggregates, Preliminary <sup>2</sup>	0	65.8
GDP and NA detailed, Preliminary <sup>2</sup>	0	99.5
GDP and NA detailed, Final <sup>2</sup>	0	126.5
Harmonised consumer price index, Actual indices <sup>3</sup>	0	18
Industrial production index <sup>3</sup>	0	48

<sup>1</sup> Computed over 3 releases in 2003, <sup>2</sup> computed over 4 releases, <sup>3</sup> computed over 12 releases

\* Information on time schedule and punctuality obtained from the GES Release Calendar maintained of the ECB

### 3.8 Indicator T3: Freshness

#### Definition and derivation

Average delay between the date the user consult the database and reference period of the most up to date data. Its compilation is straightforward.

#### Frequency

Monthly or quarterly, depending on PEEI.

#### Comment

Indicator referred to quality of the overall data-base (Euro-IND in the example below).

#### Target

EU delay target as in PEEIs.

#### Meta information

Results of last quality reports.

#### Geographical and time segmentation

EU15, EU25, MS, AC, Euro zone; last year of releases.

### Example

#### Freshness of active series in Euro-IND database, by frequency

	< 30 days		30 to < 60 days		60 to < 90 days		90 to < 180 days		180 to < 365 days		+ 365 days		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N
Yearly	0	0.0	0	0.0	0	0.0	0	0.0	158	95.2	8	4.8	166
Quarterly	0	0.0	256	3.2	0	0.0	6 623	83.2	568	7.1	514	6.5	7 961
Monthly	0	0.0	3 668	22.1	4 737	28.6	6 822	41.2	1 105	6.7	237	1.4	16 569
<b>TOTAL</b>	<b>0</b>	<b>0.0</b>	<b>3 924</b>	<b>15.9</b>	<b>4 737</b>	<b>19.2</b>	<b>13 445</b>	<b>54.4</b>	<b>1 831</b>	<b>7.4</b>	<b>759</b>	<b>3.1</b>	<b>24 696</b>



### 3.9 Indicator AC1: Number of database accesses and downloads

#### Definition and derivation

Number of accesses/downloads to the database for the reference period.

#### Frequency

Monthly or quarterly.

#### Comment

Indicator referred to quality of the overall data-base (Euro-IND in the examples below).

#### Target

Increase of accesses (and downloads) of series from the database.

#### Meta information

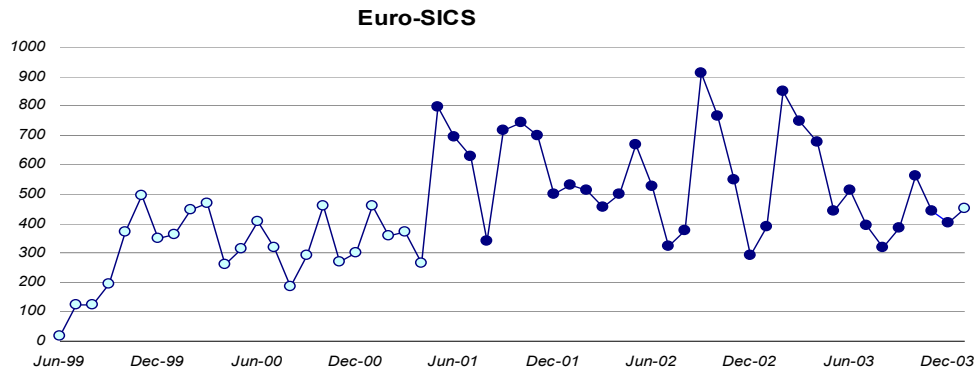
Results of last quality reports; reasons for changes in trends; users' satisfaction surveys.

#### Geographical and time segmentation

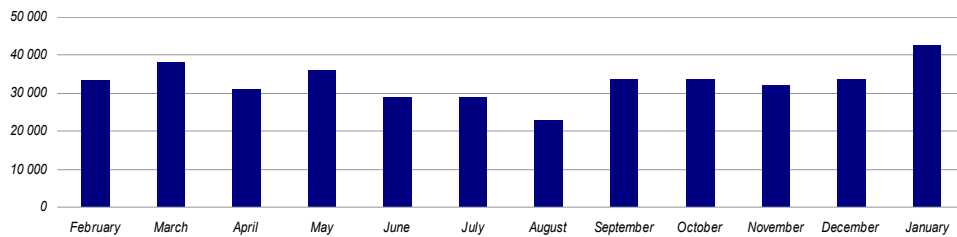
EU15, EU25, MS, AC, Euro zone; last year of releases.

### Example

#### Evolution of the number of extractions from the Euro-IND database



#### Evolution of the number of hits made in the Euroindicator web-site



### **3.10 Indicator AC2: Number of PEEIs with SDDS metadata files**

#### Definition and derivation

Number of PEEIs accompanied with metadata covering SDDS schemes.

#### Frequency

Monthly or quarterly, depending on PEEI.

#### Comment

#### Target

Complete (100%) coverage; metadata readily available; information according to standards.

#### Meta information

Results of last quality reports; perspective changes; judgment on accessibility and clarity of metadata.

#### Geographical and time segmentation

EU15, EU25, MS, AC, Euro zone; last year of releases.

## **4. Conclusion**

The paper presents a limited set of indicators covering four out of the six Eurostat quality components. Comparability and coherence are not considered here mainly for practical reasons. These dimensions have still to be further worked out in order to be incorporated into a regular monitoring of the PEEIs.

After the endorsement by the ESS management bodies, these indicators are meant to be implemented in a production system for all PEEIs indicators.

The first score board should be compiled for the reference year 2003 and will be incorporated in a pilot quality report. This quality report will serve as a basis for discussion at the coordination body level of ESS of the achievement of the progresses.

## Annex 1

### Principal European Economic Indicators List

<b>Set 1: Price Indicators</b>	
1.1.	Harmonised Consumer Price Index: MUICP flash estimate: release end of reference month
1.2.	Harmonised Consumer Price Index: actual indices: release 2,5 weeks after reference month
<b>Set 2: National Accounts Indicators</b>	
2.1.	Quarterly National Accounts: flash GDP: release t+45
2.2.	Quarterly National Accounts: first GDP release with breakdowns: t+60
2.3.	Quarterly National Accounts: Sector Accounts: release t+90
2.4.	Quarterly Government Finance Statistics: release t+90
<b>Set 3: Business Indicators</b>	
3.1	Industrial production index: release t+30
3.2	Industrial output price index for domestic markets: release t+35
3.3	Industrial new orders index: release t+50
3.4	Industrial import price index: release t+30
3.5	1. Production in construction: quarterly: release t+45 2. Monthly: release t+30
3.6	Turnover index for retail trade and repair: release t+30
3.7	Turnover index for other services: release t+60
3.8	Corporate output price index for services: release t+60
<b>Set 4: Labour Market Indicators</b>	
4.1.	Unemployment rate: release t+30
4.2.	1: Job vacancy rate: quarterly 2: monthly: release t+30
4.3.	1. Employment: monthly release t+30 2. quarterly: release t+45
4.4.	Labour cost index (US: Employment cost index) release t+60
<b>Set 5: Foreign Trade Indicators</b>	
5.1.	External trade balance: intra- and extra-MU; intra- and extra-EU: release t+46