EUROPEAN CENTRAL BANK

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TRADE-OFF BETWEEN TIMELINESS AND ACCURACY

ECB REQUIREMENTS FOR GENERAL ECONOMIC STATISTICS

This contribution examines the trade-off between timeliness and accuracy of euro area general economic statistics[1]. The European Central Bank (ECB) believes that improvements to the current timeliness are possible without damaging accuracy.

Apart from the non-availability of many required harmonised variables, the timeliness of euro area general economic statistics is the key issue in the present discussion on euro area macroeconomic statistics. The situation has been criticised not only by the press and financial market participants; increasing pressure on the EU Member States also stems from governments, from the European Commission and from the ECB. In the Action Plan on EMU Statistical Requirements (EMU Action Plan), established by the European Commission (Eurostat), in close co-operation with the ECB, emphasis was put on timeliness.

In the discussions, national producers of general economic statistics (Statistical Institutes) underlined the trade-off between timeliness and accuracy, whilst accepting that timely releases are important. This article explains the reasoning for requesting improvements to the timeliness of euro area statistics and why the ECB believes that improvements to the current timeliness are possible without damaging accuracy.

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1   General economic statistics are defined as statistics on prices, costs, output and demand, the labour market and external trade.

1.   Definitions

There has been intensive discussion on the "quality" of statistics in the recent years. Timeliness and accuracy are often regarded as an integral part of the definition of the "quality" of statistics. This article uses the following definitions:

Timeliness represents the time taken to compile and publish any statistical indicator, measured from the end of the reporting period. *Accuracy* may be defined by the discrepancy between the data compiled and the unknown "true" figure (the target value). For this article the discrepancy (the total error) is separated into two components. The first one, the discrepancy between the final figure and the target figure, is not precisely measurable. Some indication of such discrepancy can be deduced by measuring the consistency between related statistics[2]. The second one, the difference between the first published data and the final figure, can be quantified by comparing these two. It is a measure of the inaccuracy which is due to the release of provisional results. *Revisions* – which are supposed to improve the accuracy of a previously published figure – can be caused by methodological changes, the correction of mistakes, or by the supply of new and more complete data, i.e. changes that reduce the difference to the final figure.

Whilst the assessment of "timeliness" is straightforward, the assessment of the term "accuracy" and "revisions" is less so. It is the overall accuracy, not only the revision which is

decisive for the ECB. However, for the purpose of this note it is mainly the reliability against further revisions due to more complete or final data which is used as an indicator of accuracy.

2.   Improvements to timeliness

Why is the supply of national economic statistics which had been seemingly sufficient at the national level for national monetary and other policy purposes regarded as unsatisfactory for monetary policy at the euro area level?

First, any euro area indicator is at present a composite indicator of data on the individual euro area countries. It needs comparable data and it needs sufficient country coverage to be compiled. This implies that a significant share of the euro area national data is published *before* the euro area aggregate is made available. In fact, European institutions such as the ECB face a situation that is opposite to the situation in Member States. For the euro area the "regional" data, i.e. Member State data, is published first and aggregate euro area data later or last. This situation, which reflects the institutional framework for statistics in the EU, creates information problems for monetary policy in the euro area.

Second, present monetary policy decisions for the euro area are based on information that is less up-to-date than data used for monetary policy decisions of, in particular, the Federal Reserve Board and the Bank of England. In many cases, the statistics available to the Federal Open Market Committee (FOMC) for the USA goes one quarter or 1-2 months further than information available to the ECB Governing Council for the euro area (with the exception of the Harmonised Index of Consumer Prices (HICP)).

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[2]   Consistency may be compared over time, between related variables, across countries or between data at different frequencies. A well-known consistency requirement is the accounting identity of GDP compiled from the output, expenditure and income side.

Table 1 compares the availability of data for the euro area with the situation in the US, in Germany (as the largest country in the euro area) and the UK (as the largest EU Member State outside the euro area).

Table 1
Example of timeliness: data availability for the euro area, the US, Germany and the United Kingdom

	Euro area available data for ECB Governing Council meeting 31 August 2000	United States available data for FOMC meeting 22 August 2000	Germany available data on 31 August 2000	United Kingdom available data on 31 August 2000
GDP	1st Quarter 2000	2nd Quarter 2000	2nd Quarter 2000	2nd Quarter 2000
Industrial Production	June 2000	July 2000	June 2000	July 2000
Employment	1st Quarter 2000	July 2000	June 2000	June 2000
HICP	July 2000	July 2000	August 2000	July 2000

3. Benchmark for timeliness

Several benchmarks may be used for assessing euro area statistics. For the reasons explained, the requirements of timeliness for euro area countries must not be an average of the current timeliness of all euro area countries; nor can the benchmark be the transmission deadlines set in some of the existing EU statistical legal acts.

The frequently quoted timeliness of statistics in the United States may appear ideal from a user point of view but appears not to be a realistic *general* benchmark for the EU in the medium term, at least *not for all* economic statistics. The institutional and structural differences are too big to directly compare the timeliness. The requirement for harmonised statistics in the EU is another reason why the US cannot be used as a standard, since very timely national sources may not always be adequate sources for harmonised European data. These statistics are sometimes based on different definitions and thus cannot be aggregated. However, if better timeliness of US data has been achieved due to improved statistical techniques or better organisation, European statisticians must review their practices in order to reduce the gap to the release of US data.

A practically useful benchmark is the timeliness achieved in those EU Member States with the currently best record. This criterion was in general applied for the requirements of timeliness in the EMU Action Plan as well as by the ECB publication on requirements in the field of general economic statistics. For almost all economic indicators there is a group of countries which has achieved a satisfactory timeliness, a timeliness which is better than that of the current euro area statistics, and a timeliness which has – according to experience - not led to higher revisions in those countries than in the countries which provide data more slowly.

It may be argued that benchmarking between EU countries is difficult, because national practices and conditions differ (e.g. data sources). However, as far as these differences negatively and substantially affect the timeliness of euro area statistics, these differences are a reason for further harmonisation of EU statistics. Any less

ambitious benchmark than the "group of best performing EU countries" is not suitable to the needs of the ECB and would not be accepted by financial markets, which would then continue to focus on selected, timely national indicators[3].

4.   Balance between timeliness and accuracy

Up to a certain point, timeliness may be improved without (substantially) reducing accuracy. After a certain point, this is no longer possible. The main reason is that improving timeliness forces the producer to compile the indicators from incomplete source data. As more data become available afterwards, a so-called recompilation produces different results and so revisions. The ECB considers it therefore necessary to balance timeliness and accuracy.

However, to precisely determine the optimal balance is not straightforward – in particular for a user - since the achievable gain in timeliness and the potential loss of accuracy are unknown. Moreover, the optimal balance cannot uniquely be defined for all variables and differs between uses and users. For policy use, the requirements in terms of accuracy are high. They vary depending on the role of the data (key or supplementary), on its frequency (monthly, quarterly or annual), on the level of detail monitored (total, by branches, or by countries), and on its usually observed variation from period to period (between 1/10 percentage points and several percentage points). There are, however,

some indicative guidelines which may help to narrow down the balance.

The following simplifying benchmarks are given as indicative information and are deduced from the usual practices and requirements commonly observed in central banks[4].

- The more important data are to policy decisions and reasoning, the higher is the reliability requirement. One particular example is the HICP as the key measure of price stability. Frequent revisions of more than 0.1 percentage points (p.p.) would be as damaging as a late release.

- For a set of other important indicators which usually show small period-on-period changes, acceptable revisions are equally very small (e.g. about 0.1-0.2 p.p., for producer price indices and unemployment).

- For a comprehensive set of conjunctural data, the acceptable revisions – with good timeliness – may be broadly defined as between 0.1-0.5 p.p., depending on the particular nature of the indicator, e.g. smaller for euro area quarterly GDP, higher for monthly industrial production.

- Revisions of up to 1 p.p., though not desirable, are experienced for component series, e.g. data on main industrial groupings, retail trade or foreign trade components. Revisions of more than 1 p.p. are not desirable for key statistics for the euro area.

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3   An example is the key role of the Ifo Business Climate index for Germany for financial markets, which is used as a first indicator for euro area developments.

4   Possible statistical measures such as mean absolute errors or variance measures are not considered here. Similarly, measures for the degree of consistency may be useful.

Higher revisions would often not only change the intensity of a signal, but also its direction.

- Higher revisions are, however, regularly experienced for very detailed statistics (e.g. by various branches), for series which are compiled as residuals (e.g. changes in stocks) or for data which are known to be very volatile (e.g. building permits). This is known and the analysis takes account of it.

It should be highlighted that such categories of accuracy remain a simple assessment and that other factors could be taken into account. In particular, revisions are more sensitive close to a turning point. A slight difference can have an important effect if it changes growth into recession, while the same difference would be regarded as negligible in other circumstances. Rather than to give clear and unambiguous absolute levels for the acceptable amount of revisions, the simplifying classification indicates that different grades of accuracy are within acceptable limits depending on the nature of the indicator and the level of detail.

5. Improvements to timeliness are possible

Considering the enormous differences in timeliness, it is difficult to believe that the optimal balance between timeliness and accuracy has been achieved in all countries and the same criteria have been used to determine this balance. Table 2 shows, for selected indicators, the time span between earliest and latest data releases within EU Member States. Experience does not suggest that - in a cross-country comparison - data published earlier are less reliable than data published later.

Table 2
Release time span in the EU

	Earliest release	Latest release
GDP	t + 54 (NL, UK)	T + 120 (PT)
Industrial Production	t + 36 (DK, DE, UK)	T > 90 (IE)
Industrial Producer Prices	t + 11 (UK)	T + 49 (IE, LU)
HICP	t – 6 (DE)	T + 18 (IT, AT)

For identifying the potential improvement of timeliness in the euro area, it is useful to consider the potential reasons for different timeliness. It is assumed that the main factors are

- *general priority setting.* Example: short-term statistics from quantitative statistics *or* from qualitative opinion surveys (with consequences for the available resources);

- *data sources.* Example: unemployment data from claimant registers *or* from labour force surveys;

- *technical means for collection, processing and transmission, and organisation.* Example: data transmitted at the national level or to Eurostat in common data format *or* not;

- *legal constraints.* Example: Some Member States send first figures to Eurostat before

national release, other Member States are not allowed to do so due to national law;

- *publication practices.* Example: publishing early and revising the first estimates of the Consumer Price Index (CPI) *or* publishing later in order to avoid revisions;

- *composition and size of the economy.* Example: sampling theory suggests that the relative sample size in big countries may be smaller than in small countries, unless regional results are to be produced.

Only some of these reasons for differing timeliness are directly linked to the accuracy of the data; some may be completely independent from it. For several factors it is not evident that improvements in timeliness would have an adverse effect on the accuracy of the data. This has the following implications.

It is necessary to agree on priorities at the EU level on key data for which a high and similar degree of timeliness in all Member States should be achieved. The EMU Action Plan is a first step in this direction, but a more detailed analysis has to follow. The exchange of information between countries on methods for compiling early results, including information on the practices in the US could be helpful. The use of electronic data interchange and standardised file formats for transmission of national data to Eurostat is a precondition, and many delays are caused by problems in this field. Another useful initiative would be to review the existing practical and legal constraints that contribute to the late release of first euro area results. Finally, all stages in the collection and processing of statistics at the national level should be reviewed with the objective to derive first estimates for the euro area not later than first published results by the

"group of best performing Member States in terms of timeliness". This could also include the review of existing sampling practices. A limited sub-sample of the reporting units currently surveyed in all Member States would be sufficient to derive first euro area results at aggregate level.

6.   Conclusions

Even when the timeliness of national indicators is satisfactory for the use by individual Member States, the timeliness of euro area data is not satisfactory for the single monetary policy. The current benchmark for the timeliness of euro area statistics must be the timeliness of those Member States which publish timely results already. For key policy variables such as the HICP, the extent of acceptable revisions due to more complete data is very small. The role of an indicator for policy purposes, its frequency, the level of detail by geographic area or branch as well as its average variation are the main factors that determine the acceptable extent of revisions. The large variability in current release practices for many statistics indicates a large potential for harmonisation towards best practices. It suggests that a satisfactory balance at the EU level between timeliness and accuracy has not yet been achieved. Many of the factors that influence the timeliness of data are not directly linked to its accuracy. Improvements in timeliness are therefore possible without reducing the accuracy of the data. A joint priority setting at the EU level, the review of the sample design at the euro area level, the use of electronic data transmission and common formats, the rules for providing data to Eurostat, and learning from those EU countries which publish timely reliable data, can improve timeliness without reducing accuracy.