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**TIMELINESS AND REVISION OF SHORT-TERM ECONOMIC STATISTICS - KOREA'S PRACTICES**

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## **TIMELINESS AND REVISION OF SHORT-TERM ECONOMIC STATISTICS – KOREA'S PRACTICES**

### **1. Introduction**

The purpose of the short-term economic statistics is that they provide, together with annual statistics, a comprehensive and timely picture of the economic processes, especially of the following four processes: production, income distribution, financing and expenditure, as well as their international and inter-temporal relation.<sup>1</sup>

In other words, they are supposed to answer the following type of questions. Which phase of the economic cycle are we in at present? What will be the probable development in the near future? Are we currently in the continuation of a movement already started (upward or downward) or is it possible that we are in a break in relation to this movement (turning or reversal point)?<sup>2</sup>

In order for the short-term economic statistics to fulfil their purpose as well as to provide the answers, there are some pre-conditions to be met. They are the accuracy, the timeliness, and the relevance of economic statistics.<sup>3</sup> These three requirements have been well incorporated into the guidelines/standards which every national statistical office as well as international organisation has developed.

There are two noticeable guidelines/standards for the release of principal economic indicators. One is the Statistical Policy Directive No.3 (which was last updated in 1985) of the Office of Management and Budget (OMB) of the USA. It demands from government agencies that they issue their releases within 22 working days after the reference period. The agencies are obliged to follow this request.<sup>4</sup> The other is the IMF's Special Data Dissemination Standard (SDDS) which was established in March 1996. This specifies the requirement for the coverage, periodicity, and timeliness of principal economic indicators, and for the dissemination of advance release calendar.<sup>5</sup> Korea subscribed to the SDDS on 20 September 1996.

The ideal situation is to present the relevant data as early as possible with a high accuracy. However, it seems not to be possible to fulfil all requirements at the same time. An argument is still observed between

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<sup>1</sup> Symon Algera, Structural Business Statistics: a key role in the system of economic statistics, a Dutch case, Paper presented at the seminar on Structural Business Statistics, Warsaw, 7~9 June 1999.

<sup>2</sup> Eurostat, Methodology of short-term business statistics: Interpretation and guidelines, 2002, p.6.

<sup>3</sup> With the development of a global economy, demands for international comparability are being added to the requirements for more accurate and more timely data.

<sup>4</sup> Katherine K. Wallman and Suzann K. Evinger, Meeting User Demands for More Timely Indicators: Institutional and Methodological Approaches, Paper presented at 48<sup>th</sup> plenary session of Conference of European Statisticians, 2000.

<sup>5</sup> Statistics Department of IMF, Statistical Issues and Developments in 2000, September 2000.

two alternatives. Which is better between 1) to present data as early as possible with less accuracy and 2) to make available accurate data later? Therefore, the art of those statistical organisations either national or international is to find the best balance among those three requirements – the accuracy, the timeliness, and the relevance of economic statistics.

Korea is no exception in those aspects. The Korean National Statistical Office (KNSO), as a central statistical organisation, has strived to make available a wide variety of statistics to users with a speedier timeliness and a higher accuracy. In the course of these efforts, the fast development in the technology of information and communication system has enabled the KNSO to materialize a very significant and new development in the field of data collection and dissemination.

This paper attempts to show the current situation of Korean practices in terms of the timeliness and the securing the accuracy of the data through the revision procedures. By doing so, it is hoped that some problems as well as possible solutions are identified.

## **2. Current Situation of Timeliness of Korean Data**

46 short-term statistics were selected for this study as shown in the Appendix. The following criteria were taken into consideration of the selection. These are the selection criteria developed by the Statistics Netherlands.<sup>6</sup> These also seem to be the securing the relevance of short-term economic statistics. The first is the variability of a (macro-) economic phenomenon. For example, short-term data on consumption of a fixed capital are not very meaningful. If these figures nevertheless are needed (e.g. for completeness), it is clearly relatively easy to estimate them.

The second selection criterion for short-term indicators is the degree of implications for an economy of a change in the variable to be measured: in business terms, for example a decline in exports of goods and services is much more serious than a decline in exports of financial capital. The third is the extent to which a short-term indicator is really indicative for a variable to be measured. An example of this is prices of imports and exports. Unit values as a direct result of customs statistics can be very indicative for the prices of specific commodities. For goods which vary greatly in quality, however, the changes in unit values may be a weak price indicator.

A fourth and last (but not least) selection criterion is the significance of a short-term indicator in the whole description of the economic progress. In other words, the indicator has to fill a gap in the statistical description of the economic process.

For the question of how to compile short-term indicators, the main requirement is that they have to be available quickly. This means that indicators must be based on information that can easily be provided by respondents. So relatively simple questions (for the respondent) on simple variables and, importantly, the number of questions has to be kept to a minimum.

The second aspect in this respect is that it must be possible to compile the indicators continuously. There is little use in basing an indicator on a sample from a variable population, if the representativeness of the sample can not be continued, as the indicator then does not describe the real development. The same holds for indicators based on fixed ratios that can not be updated in time or indicators that are biased precisely in times of important business cycle changes. Nothing is more frustrating than an indicator that is found wanting at the moment really interesting development occur.

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<sup>6</sup>. Symon Algera, Short-term Indicators; Their Roles in the Statistical System and Recent Developments; the Dutch Case, Paper presented at OECD Short-term Economic Statistics Expert Group meeting, 2002.

The table 1 presents the summary of timeliness of 46 short-term statistics selected with the above mentioned criteria. The table shows that 26 statistics (56.5% of the total) are revealed to be available within 30 days after the reference month or quarter in Korea. Only 7 short-term statistics (15.2% of the total) are available beyond two months or more after the reference month or quarter.

The examples of the former are statistics such as the industrial production index, the consumer price index, the wholesale and retail trade index, the results of the labour force survey, the balance of payments, the producer price index, the business survey index, the money circulation, the international reserves, the foreign direct investment, the merchandise trade, and the house price trend, etc. Meanwhile, the examples of the latter are found to be the transaction value of E-commerce, the results of the household income and expenditure survey, the internal migration, the flow of funds among economic sectors, the supply and consumption of energies, and the labour productivity and unit labour cost, etc.

It is very natural that those statistics (e.g., CPI, PPI, the household confidence index, etc.) based on a specific date or a week as the reference period during the month are released in a more timely fashion. The statistics (e.g., industrial production index, retail trade index, etc.) based on the average of whole month are revealed to take more time to be released. Meanwhile, the statistics taking the longest time for the release are found to be the statistics which involves several agencies for the compilation (e.g., the transaction value of E-commerce, the supply and consumption of energies, the labour productivity, the flow of funds, etc.).

**Table 1: Summary of Timeliness of Korean Main Economic Statistics**

(As of 1 May 2003)

	Number of days based on the release of preliminary/final data from the end of the reference month/quarter					
	Total	0~14 days	15 days~less than 1M	1M~less than 2M	2M~less than 3M	3M~less than 6M
Total	46	8	18	12	5	3
Examples of statistics		CPI, PPI, BSI, M1, Merchandise trade, etc.	IPI, Retail trade index, BOPs, FDI, etc.	Index on service industry activities, External liabilities, etc.	Household income and expenditure, Quarterly GDP, Internal migration, etc.	Transaction value of E-commerce, Supply and consumption of energies, Labour productivity.
Special features		Based on a specific date or a week as a reference period during the month.	Based on the average of the whole month as a reference period.	Derived/analytical statistics.	The statistics include the data of household sector.	The statistics are based on several sources of data.

### ***Comparison with International Organisations' Requirements***

As mentioned earlier, Korea subscribed the IMF's SDDS in 20 September in 1996 and started posting its metadata on the Dissemination Standards Bulletin Board (DSBB) in March 1998, and has been disseminating advance release calendars since 1 November 1999. The National Summary Data Page has been hyperlinked since 9 June 2000. The SDDS is a best practice dissemination standard. It covers data dissemination in four sectors of the economy (real, fiscal, financial, and external), as well as population, and identifies four dimensions (data, access, integrity, and quality) of data dissemination for each sector.

Then, Korea's data dissemination practices against the SDDS were assessed by the mission team from the IMF in April 2001. At that time, they also made an in-depth assessment of the quality of key datasets for the national accounts, prices, government finance, monetary, and balance of payments statistics. These datasets are compiled and disseminated by the KNSO, the Bank of Korea (BOK), and the Ministry of Finance and Economy (MOFE). The followings are the summary of the findings of the mission team.<sup>7</sup>

The periodicity and timeliness for macro-economic data in Korea are summarised and compared with SDDS specifications as shown in Table 2. Korea meets the SDDS specification of the periodicity and timeliness for all data categories, except for the general government operations where Korea took a flexibility option for the timeliness of this data category. Periodicity and timeliness exceed the SDDS requirement for the requirement for the employment and balance of payments categories. Timeliness exceeds the SDDS requirement for the consumer price and producer price indices, and for the analytical accounts of the banking sector.

**Table 2: Overview of Korean Practice regarding Periodicity and Timeliness of Data Compared to the SDDS**

SDDS Data Category	Periodicity		Timeliness	
	SDDS Requirement	Korean practice	SDDS Requirement	Korean practice
<b>Real Sector</b>				
-National accounts	Q	Q	1 Q	2.5 M
-Industrial production indices	M	M	1 M	1 M
-Employment	Q	M	1 Q	17 days
-Unemployment	Q	M	1 Q	17 days
-Wages/earnings	Q	M	1 Q	2 M
-Consumer price indices	M	M	1 M	0 days
-Producer price indices	M	M	1 M	1~3 days
<b>Fiscal Sector</b>				
-General government operations	A	A	2 Q	11 M
-Central government operations	M	M	1 M	40 days
-Central government debt	Q	M	1 Q	40 days
<b>Financial Sector</b>				
-Analytical accounts of the banking sector	M	D	1 M	14 days
-Analytical accounts of the central bank	M (W recommended)	M	2 W (W recommended)	14 days
-Interest rates	D	M	...	1 M
-Share price indices	D	D	...	Daily
<b>External sector</b>				
-Balance of payments	Q	M	1 Q	1 M
-International reserves	M (W recommended)	Bi-M	W	3~5 days
-Reserves template	M (W recommended)	M	1 M (W recommended)	1 M

<sup>7</sup> Statistics Department of IMF, Mission's Report on Observance of Standards and Codes for the Data Module – Korea (draft), 3 July 2001.

-Merchandise trade	M	M	8 W (4~6 W encouraged)	3 days
-International investment position	A	A	2 Q	15 M
-Exchange rates	D	D	...	Daily
<b>Population data</b>	A	A	...	Annually

Note: (D) daily; (W) weekly or with a lag of no more than one week from the reference data or the closing of the reference week; (M) monthly or with a lag of no more than one month; (Q) quarterly or with a lag of no more than one quarter; (A) annually; (...) not applicable.

Source: IMF, Draft Report on the Observance of Standards and Codes (ROSC): Data Module – Korea, 3 July 2001, not yet published.

These speedy releases of data in Korea are well pronounced if one compares these with the requirements of the Eurostat and the European Central Bank. Eurostat formulated a Council Regulation No 1165/98 of 19 May 1998 concerning short-term statistics. Although this regulation is explicitly an evolutive framework rather than a set of very detailed final guidelines, it contains a list of variables, the reference period, level of detail, and deadline for data transmission to the Eurostat from the national statistical institutes in its annexes. The specific deadlines after the end of the reference period required by the Eurostat are shown in the Annex Table 2.<sup>8</sup>

In the case of the European Central Bank, it also expressed its request for timely data needed for monetary policy analysis in the euro area. The ECB identified the main macro-economic indicators used for monetary policy purposes as well as presented its requests for the required level of detail and timeliness of each indicator. The specific timeliness required by each indicator is also shown in the Annex Table 2.<sup>9</sup>

Looking into the table reveals that the timeliness of main economic indicators in Korea exceeds the requirements of the Eurostat and the ECB, except a few indicators. The following statistics are found not to meet the requirements of timeliness - wages, hours of work, unit labour cost, and output in main service sector.

### *Comparison with Practices of Other Countries*

It is also interesting to compare the Korean practices with those of other countries such as USA, Japan and the countries in the Euro-zone. The practices of those countries are available from a Eurostat's paper.<sup>10</sup> The data on the timeliness of those countries together with the Korean practices are presented in Table 3.

As regards the comparison of the timeliness between the US and the Europe, the paper shows that the US economic indicators are much faster available than the same indicators from the EU. For example, the industrial production index is currently published from Eurostat about 50 days after the reference month, while the US releases its indicator about 15 days after the reference month. The situation of the retail trade

<sup>8</sup> Gunter Schafer, The Short-term Statistics Council Regulation, Paper presented at 11<sup>th</sup> Seminar on EU Short Term Economic Indicators: Meeting New Needs, 2001.

<sup>9</sup> ECB, Statistical requirements of the European Central Bank in the field of General Statistics, Monthly Bulletin of ECB, August 2000.

<sup>10</sup> Dominique Ladiray and Gian Luigi Mazzi, European Short-term Statistics: New Approaches, Paper presented at CEIES Seminar on EU Short-term Economic Indicators: Meeting New Needs, Eurostat, 2001.

index and the producer price index are also found to be similar situation with that of the industrial production index.<sup>11</sup>

The comparison of the Korean practices with the US indicators also reveals that the United States has much shorter production times for many indicators than is the case for Korea. The Korean data are generally shown to be less timely than those of the USA. Especially, such data as wages, employment/unemployment, indicators on money circulation, fiscal data and data on government debt are shown to be less timely in Korea than those of the USA.

In the USA, it seems that the Statistical Policy Directive No. 3 set by the OMB (Office of Management and Budget) has played an important role to speed up the releases of indicators. The Directive obliges federal agencies to release short-term macro-economic indicators that have been designated as principal federal economic indicators within 22 working days of the end of the reference period. Clearly, this obligation has forced the agencies to adopt methodologies and an organisation able to respect this deadline.

However, there is a point it is worthwhile to mention for some Korean indicators. In Korea, the following three indicators are found to be produced much faster than the same indicators of the US - the consumer price index (done by the KNSO), the producer price index (done by the BOK) and the data on merchandise trade (done by the Korea Customs Service). The consumer price index is always available at the last day of the reference month in Korea. In cases of the producer price index and the data on merchandise trade, they are seen to be available at the beginning of the month (at least within three days) after the reference month. It can be said that the timeliness of these three indicators is ranked as the top among countries in the world.

This kind of phenomenon in term of the rapidity shown in Korea can be regarded to be very unique. Although there have been no in-depth studies on this aspect, the following two facts seem to have enabled the Korea to produce the data very rapidly. One is the deployment of statistical personnel throughout the country. The KNSO maintains 47 branch offices throughout the country, where 1,300 staff-members are assigned to do the filed work for data collection. The other is the establishment of the local area network (LAN) system within the KNSO.

Both the BOK and the Korea Customs Service are also seen to have their own branch offices throughout the country and LAN systems. Then, each branch office of each agency is able to send the information directly to the databases of headquarters. During the processes, staff-members in fields carry out the work of data edits on the spots when they collect the information from the respondents.<sup>12</sup>

These two systems are believed to have played a crucial role to produce some short-term economic statistics very rapidly in Korea.

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<sup>11</sup> Christoph Walkner, Why US business indicators are faster than those from the EU – Some reflections and a comparison of practices, Short-term statistics: Improving timeliness and cooperation, Eurostat, 2001.

<sup>12</sup> For example, the KNSO introduced the CAPI (computer assisted personal interview) system in April 1999 in full scale for its monthly Economic Active Population Survey. This system together with the automatic consistency checking system installed in PCs have made the employment/unemployment statistics available about two weeks earlier than before.

**Table 3: Publications of major economic indicators in Euro-zone, USA, Japan and Korea**

Indicator 1), 2)	Euro-zone (ECB)		USA 3)		Japan 4)		Korea	
	Frequenc y	Delay (days)	Frequenc y	Delay1) (days)	Frequenc y	Delay (days)	Frequenc y	Delay (days)
<b>1) Price climate</b>								
- Consumer prices	M	20	M	16	M	28	M	0
- Producers/wholesale prices	M	36	M	13	M	10	M	1~3
- Wages	Q	95	M	5	M	30	M	60
- Import prices	-	-	M	12	M	10	M	15
<b>2) Money creation</b>								
- Cash in circulation	M	30	W	1	M	3	M	10
- Money supply M3	M	30	W	10	M	15	M	60
- Bank lending	M	30	W	9	M	11	M	30
<b>3) Economic activity</b>								
- Consumer confidence	M	7	M	-3	Q	24	M	15
- Industrial confidence	M	7	M	2	-	-	M	7
- Order intake	-	-	M	26	M	42	-	-
- Building permits	-	-	M	18	M	30	M	60
- GDP, real	Q	73	Q	28	Q	71	Q	60
- Private saving	-	-	M	28	M	35	-	-
- Industrial production	M	59	M	15	M	28	M	30
- Retail sales	M	65	M	13	M	26	M	30
- Unemployment rate	M	37	M	5	M	29	M	17
<b>4) Public finances</b>								
- Budget balance (total)	A	100	M	20	A	>200	M	40
- Debt (total)	A	100	M	6	A	>200	M	40
<b>5) external economy</b>								
- Trade balance	M	60	M	50	M	24	M	3
- Balance of payment	M	30	Q	76	M	42	M	30
- Official reserves	M	30	W	4	M	4	Bi-M	5

Notes: 1) Deutsche Bank is referred as the source agency of the table.

2) In cases of Euro-zone, USA and Japan, the delay shows the number of days from the end of the reporting period as of 7 December 2000. Meanwhile, the delay in Korea shows the number of days from the end of the reference month/quarter, and is on the basis of the releases of preliminary and/or final data.

3) Negative figure in the consumer confidence of the US shows that data is collected during the reporting period, i.e. they show the number of days until the end of the reporting period.

4) Instead of M3, Japan's data refer to M2+CD. Instead of building permits, Japan's data refer to housing starts.

Source: Dominique Ladiray and Gian Luigi Mazzi, European Short-term Statistics: New Approaches, 11<sup>th</sup> CEIES Seminar on EU Short Term Economic Indicators: Meeting New Needs, 2001. The paper is available at Eurostat's web site

### 3. Revision

In addition to the timeliness, the accuracy is also regarded as an integral part of the quality of statistics. 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.<sup>13</sup>

The first one, the discrepancy between the final figure and the target figure, is not precisely measurable (although for estimates produced from probability sample surveys the sampling error of the estimate can be estimated). Some indication of this discrepancy can be obtained by measuring the consistency between related statistics. 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.

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.

#### *Revision Status in Korea*

Turning to the Korea’s practices in terms of the revisions, three distinctive features are found. These phenomena can be derived from the Annex Table 3 which shows the comparison of days taken for data finalization between USA and Korea. The summary is presented in Table 4.

Firstly, the statistics which do not go through the revision process are much more numerous than the statistics which go through the revision process. Out of the selected 46 statistics as shown in the Annex Table 1, 27 kinds of statistics are revealed not to go through the revision process. These statistics are becoming final as they are published. The examples of these statistics are the consumer price index, unemployment rate, consumer confidence index, producer price index, business survey index, monetary supply (M3), interest rates, unit labour cost, etc.

Secondly, even among the statistics which go through the revision process, there is a tendency that the preliminary data are finalized after having the revision process only once. No further revisions in the subsequent two or three months are made. Examples of these statistics are the industrial production index, value of machinery orders received, wholesale and retail trade index, index on service industry activities, etc. However, there are some indicators which are the exception of this rule. Such indicators as the leading index (from September 2001) and the monetary indicator (M3) are revised twice in the subsequent two months to become the final data. In cases of the data on merchandise trade and the balance of payments, they are found to be revised three times in the subsequent three months.

Thirdly, another feature is also found. In some statistics such as the government finance statistics and the data on construction permits, there is no clear establishment of revisions schedule. Although the released

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<sup>13</sup> Werner Bier and Henning Ahnert, Trade-off between Timeliness and Accuracy – ECB Requirements for General Economic Statistics, European Central Bank, 2001.

data are cited as the preliminary, monthly revisions to data occur rarely and are minor. However, a regular annual revision takes place, and annual data are final when published.<sup>14</sup>

The reasons of the above three phenomena (no revision process in the majority of statistics, revision to data only once in the subsequent month and no clear establishment of revision schedule) may be explained in the following three reasons. One reason can be the lack of statistical personnel in all the agencies in Korea. Most statistics are produced by only one or two staff-members in all the agencies. For example, the Monthly Labour Survey and the government finance statistics are carried out by one staff-member at the Ministry of Labour and at the Ministry of Finance of Economy, respectively. The quarterly data on labour productivity and unit labour cost are also compiled by one person at the Labour Productivity Centre.

The other reason may be due to the lack of understanding from the general public for the revision of data, especially from the people in news media. They expect that discrepancies between the preliminary data and the final be small, preferably negligible. Thus, they are quite often reluctant to accept the revised data. They would like to keep the initial published data as the final data.

Last (but not least) reason can be due to the endless efforts of KNSO to minimize the general survey errors (non-sampling errors) at various stages of data compilation. Especially, the introduction of the Quality Management Teams at each regional office and the Performance Evaluation System for Regional Offices seems to have made the general survey errors minimal.

**Table 4: Kinds of Statistics with/without Revision in Korea**

	Statistics which do not go through the revision process.	Statistics which go through the revision process	Statistics which go through the revision process, but establishment of revisions schedule is not made.
Kinds	27	17	2
Examples	Consumer price index, Producer price index, Consumer confidence index, Business survey index, M3, Interest rates, Labour productivity, Unemployment rate, etc.	Industrial production index, CI, Value of machinery orders received, Retail trade index, Index on service industry activity, GDP, BOPs, M1 and M2, External liabilities and assets, Merchandise trade, etc.	Government finance statistics, Statistics on construction permits
Features	Statistics which become final as they are published.	Most of statistics are revised only once in the subsequent month.	Revisions to data are rare and minor.

Source: Annex Table 1.

### ***Revision Pattern***

As regards the revision patterns, the following four categories of revision patterns have been identified; 1) Non-regular and minor revisions of the time series, 2) Continuous revisions of the latest value(s), 3) Revision of the time series at intervals (e.g., every year) over longer time spans, and 4) Continuous revisions over longer time spans.<sup>15</sup>

<sup>14</sup> In cases of data on the value of construction orders received, the value of machinery orders received and the production capacity index, monthly revisions to the preliminary data are not also generally taken place.

<sup>15</sup> Henning Ahnert, Revision Analysis for Selected Euro Area and EU Country Short-term Indicators, Short-term statistics: Improving timeliness and cooperation, Eurostat, 2001.

If one applies the revision patterns to the cases of Korean short-term statistics, one can see that a combination of the type 2) and the type 3) is widely used. For example, the preliminary data on monthly industrial production indices are always revised in the subsequent month. Then, every February in the following year, all monthly series of previous year are used to being revised.

### ***Magnitude of Revision***

As regards the magnitude of revision, the Table 5 and the Annex Table 4 present the differences between preliminary and final data for five selected indicators. The table compares the first growth rate published for a reference month, with the growth rate after the revision one month later (two months later), in cases of the industrial production index and the retail trade index (the index on service industry activities). In cases of the industrial production index and the leading index, the table compares the first index published, with the revised index one month later. Meanwhile, in the case of the data on balance of payments, it compares the absolute value between the preliminary and the final.

The table shows that the magnitude of the revisions is not so much pronounced for the four indicators. For example, it is revealed that the amounts of revisions are 0.11 and 0.13 percentage points for growth rate of industrial production and retail trade in Korea, respectively, which are a little smaller than those of the US and Euro-zone. However, in the case of the data on balance of payments, it seems that the magnitude of the differences is bigger. This is because the occurrence of export/import is subject to frequent cancellation or renewal of the contracts. Thus, revision is made when there is a change of over US\$ 30 millions a month in export/import data of the Korea Customs Service and when data from the monthly foreign exchange reporting system are revised.

**Table 5: Magnitude of Revisions**

Refernce month	Growth rate of industrial production index	Leading index	Growth rate of wholesale & retail trade	Growth rate of service industry activities	Balance of payments in million US dollars
Mar.2001	0.2	-0.2	-0.1	-1.9	0
Apr.2001	-0.1	0.0	0.1	-1.3	-46
May 2001	0.0	0.2	-0.1	-0.7	-149
Jun.2001	-0.1	-0.1	0.4	-0.5	10
Jul.2001	0.2	0.1	0.4	-1.4	-70
Aug.2001	0.3	-0.1	0.1	-2.4	0
Sep.2001	0.0	0.5	0.1	-0.7	-110
Oct.2001	0.0	0.1	0.0	-0.6	-90
Nov.2001	0.1	0.0	0.0	-0.1	40
Dec.2001	0.0	2.4	0.2	0.1	-1,470
Jan.2002	-0.2	-0.2	0.0	0.0	0
Feb.2002	-0.1	0.1	-0.1	0.4	-60
Average in Korea	0.11	0.33	0.13	0.84	162
Average in USA	0.20		0.19		
Average in Euro-zone	0.14		0.22		

Note: The figures for US and Euro-zone refer to the average of the differences between the preliminary and the final for reference month of January to September on 2000 on the basis of the growth rate. Signs of minus are not considered to calculate the average for Korea, US and Euro-zone.

Source: Web sites of KNSO (<http://www.nso.go.kr>, in Korean language) and the Bank of Korea (<http://www.bok.or.kr>, in Korean language).

### ***Reasons for Revision***

As regards the reasons for revision, it is generally known that revisions can be caused by methodological changes, the correction of mistakes, or by the supply of new and more complete data. A US study revealed more detailed reasons for revisions. As major reasons of revisions, the study presented them as follows: i) tight deadlines for the release of data resulting mainly from pressure from users, ii) late responses or corrections from respondents, iii) errors detected by the statistical agencies, iv) the update of seasonal adjustment, v) change in definition of the variable being measured, vi) benchmarking, and vii) change in the sample frame.<sup>16</sup>

Major reasons for revisions in Korea are also found to be similar with those of the US OMB's study. Late responses or corrections from respondents, the errors in the survey and changes in the sample frame are some examples of reasons for revisions. Table 6 presents the detailed reasons of the revision which was done for the 1998 industrial production index in Korea. Out of total sampled establishments (7,632 establishments), 9.4 % (714 establishments) are observed to have any kind of errors which needed to be taken into the consideration of the revision. It is also noteworthy to say that the errors in the sample frame were bigger than those of the errors in the survey itself as well as benchmarking for the revision was not applied in Korea.

In the context of benchmarking as one reason for revisions, it is necessary to distinguish between revisions due to errors and those due to the benchmarking (the incorporation of new information). The general idea is that it is preferable to integrate new information on a regular, but not continuous basis in order to make the series more stable.

**Table 6: Reasons of Annual Revision for 1998 Industrial Production Index in Korea**

	Number	%
Total sampled establishments as of the end of 1998	7,632	100.0
Establishments which have the following errors in survey	250	3.3
- Errors in quantity or unit of products (these errors may occur in the process of converting the traditional measuring system into the metric system)	104	1.4
- Misclassification of products (including errors in coding)	33	0.4
- Omission of products	87	1.1
- Inclusion of products which are out of scope	26	0.3
Establishments which have the following errors in the sample frame	464	6.1
- Omission of establishments	176	2.3
- Inclusion of closed establishments (establishments which have no output)	185 (55)	2.4
- Inclusion of establishments below cut-off size of employees (e.g. less than 20 employees)	103	1.4

Source: Current Industrial Statistics Division, Annual Revision for 1998 Industrial Production Index, mimeographed, KNSO, 8 Feb. 1999.

<sup>16</sup> Office of Management of Management and Budget, Statistical Policy Working Paper 7 – An Interagency Review of Time-Series Revision Policies, available at <http://www.fcs.gov/working-papers/sw7.html>.

### *Observance of Guidelines*

The Statistical Policy Directive Number 3 of the US Office of Management and Budget also includes the following six guidelines when issuing and evaluating preliminary data and revisions.<sup>17</sup>

- i. Agencies shall clearly identify figures as preliminary or revised.
- ii. Agencies shall only release routine revisions of a principal economic indicator as part of the regular reporting schedule.
- iii. If the difference between preliminary and final aggregate figures is large relative to average period-to-period differences, the agency must either take steps to improve the accuracy of preliminary estimates or delay the release of estimates until a reliable estimate can be made.
- iv. If preliminary estimates show signs of a consistent bias (for example, if revisions are consistently in the same direction), the agency shall take steps to correct this bias.
- v. Revisions occurring for routine reasons, such as benchmarking and updating of seasonality factors, shall be consolidated and released simultaneously.
- vi. Revisions occurring for other than routine reasons shall be fully explained and shall be released as soon as correction can be completed.

Although there exist no in-depth studies on Korea's observance of these guidelines, it seems that the statistical agencies in Korea follow the guidelines when they publish the preliminary data and make revisions of data.

## **4. Conclusions**

It is seen that most short-term economic statistics in Korea meet the requirements of international communities such as IMF, Eurostat and ECB in terms of the periodicity and timeliness. The exception in timeliness is the data on general government operations.

However, the comparison of Korea's practices with US data shows a little different picture. Some short-term economic statistics in Korea are shown to be more timely than those of the US, and some are less timely or some are almost equally timely. The examples of the former are the consumer price index, the producer price index and the merchandise trade data.

As regards the revisions, three distinctive phenomena are seen in the Korean data – 1) many of the statistics are seen not to go through the revision process, 2) there is a tendency that the revision is not done frequently. It is generally done only once in the subsequent month even among the statistics which go through the revision process, and 3) some statistics are also found not to have any clear established revisions schedule. The possible reasons for these special features are presented in this paper.

It seems, however, that this paper still does not give answers to questions on timeliness and revisions of data – which is better between 1) to present data as early as possible with less accuracy and 2) to make available accurate data later?, and is it necessary to go through the revision process and if so, what are the appropriate number of scheduled revisions?

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<sup>17</sup> Katherine K. Wallman and Suzann K. Evinger, *ibid.*, 2000.

Solution of some of these questions will require further statistical research. Some proposals for further studies for Korea can be on 1) to find out ways to improve the timeliness of the statistics which are less timely, 2) to implement the study on the impact of revisions on users, and 3) to set up the revision policy guideline like the Statistical Policy Directory No.3 of the US.

In order to speed up the release of statistics while maintaining the quality of statistics at higher standards, the upgrade of processing systems is mostly needed. It is a natural characteristic of users to try to get the most timely and accurate economic information. This is particularly so in periods of economic uncertainty like the one we are currently experiencing.<sup>18</sup> There is also a saying; the faster the better.<sup>19</sup>

However, it seems that the fast availability of information is not always good to users.<sup>20</sup> Many revisions after the first release of data may cause confusion to users. Work needs to be done to try to reduce the confusion caused by the excessive revisions as well as to meet the expectations of the general public. They expect that discrepancies between preliminary and final data to be small, preferably negligible. Thus, the study on the impact of revisions on users as well as the establishment of a consistent revision policy is necessary.<sup>21</sup>

In this context, the so-called “one number policy” adopted by some countries for their price indices (the consumer price index and construction cost index) and/or annual structural statistics needs to be taken into our consideration. Revision of data would be very inconvenient for users in some areas where users use the data, for example, for regulation of contracts. Thus, the identification of such areas which should have one number policy seems to be necessary.

Meanwhile, in the context of international guidelines, the periodicity and timeliness for most macro-economic data are well specified by international communities such as IMF, Eurostat and ECB. However, guidelines for revisions are seen to be not existent. For example, it is not easy to find out the guidelines on the necessity of revisions, the revision pattern, major reasons of revisions and the proper number of scheduled revisions, etc. Therefore, every country is free to choose its own method for revisions. The set-up of the revision policy guideline at international level would therefore be beneficial.

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<sup>18</sup> For example, the US Bureau of Economic Analysis (BEA) has requested a large amount of budget for FY 2003 in order to speed up the release of key economic data such as the monthly international trade in goods and services estimate and the annual GDP-by-industry data. (BEA, Seeks to Improve Quality and Timeliness of Economic Statistics, BEA 02-04).

<sup>19</sup> Yves Franchet, Eurostat and the Trade-off between Rapidity, Accuracy and Comparability: Past Objectives and Future Challenges, Paper presented at 48<sup>th</sup> plenary session of CES, 13-15 June 2000.

<sup>20</sup> It is also interesting to categorize ‘users’ into various types. A paper of US OMB (Statistical Policy Working Paper 7 – An Interagency Review of Time-Series Revision Policies) attempted to examine the needs of ‘users’ on data revisions by monitors and casual analysts, while a study of the Statistic Denmark (Electronic Dissemination: An International Benchmarking 2000, January 2001) categorized them into farmers (e.g. information marketers), miners (e.g. planners and researchers) and tourists (e.g. the general public, students and news media).

<sup>21</sup> Eurostat, *ibid.*, 2002, p.138.

Annex Table 1: Timeliness of Korean Main Economic Statistics (Indicators)

Name of statistics by source agencies	Main contents/characteristics	Periodicity	Release date			Basic methodologies/special features
			Preliminary	Final	Revision	
(Korea National Statistical Office)						
1. Composite indices (CI) of leading, coincident and lagging indicators	For assessing current and future economic trends, particularly cyclical expansions and recessions.	M	T+30 days	T+60 days	Feb. of the following year	Nine indicators (BSI, share price index, index on equipment investment, etc.) are used to compile the leading indicator from February 2003.
2. Indices on production, shipment and inventory	Output, shipment and inventory mainly measured by quantity of items	M	T+30 days	T+60 days	The same as CI	Bases on a sample of 8,400 establishments with 20+ employees (a census for establishments with 100+), covering 647 items. Data are collected once a month during 5th~19th of the month following the reference month.
3. Index on equipment investment	For assessing future trends on industrial production	M	T+30 days	T+60 days	The same as CI	Estimates through the commodity flow method
4. Value of machinery orders received	Advance indicator of developments in industrial activity	M	T+30 days	T+60 days	The same as CI	Contractual value based on a sample of 123 establishments (Representativeness of sample: 68%).
5. Value of construction orders received	Advance indicator of developments in construction activity	M	T+30 days	T+60 days	The same as CI	Contractual value based on a sample of 290 establishments (Representativeness: 54%)
6. Consumer price index	The overall rate of price change for a fixed basket of goods & services	M	-	T+0 days	-	Based on a sample of 13,000 shops and 7,800 rented houses, covering 516 items. Agricultural products' group are surveyed three times a month, on one of weekdays in which the 5 <sup>th</sup> , 14 <sup>th</sup> and 23 <sup>rd</sup> of the month fall.
7. Production capacity and	The ratio of production to	M	T+30 days	T+60 days	The same as	Based on a sample of 2,400

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operation ratio indices in manufacturing	equipment and structures capacity	M	T+30 days	T+60 days	CI	establishments with 20+ employees, covering 265 items.
8. Value of construction work completed	Actual and/or imputed value of receipts for completed construction work	M	T+30 days	T+60 days	The same as CI	Based on a sample of 190 establishments. (Representativeness of sample: 50%)
9. Indices on service industry activities	Concept of turn-over	M	T+40~45 days	T+70~75 days	-	Based on a sample of 4,000 establishments in categories H, I, K, M, O of ISIC Rev.3.
10. Wholesale and retail trade indices	Value of receipts of wholesale and retail establishments, primarily from selling merchandise. An indication of household consumption behaviour.	M	T+30 days	T+60 days	The same as CI	Based on a sample of 5,500 establishments. CPI and PPI are used as deflators for value of transaction.
11. Value of E – commerce (B2 C, B2B and B2G)	Value of transaction	Q	-	T+5.5 months	-	As of Sep. 2002, the survey covers 2,057 enterprises, 303 government institutions and 2,575 cyber shopping-malls.
12. Value transacted done by Cyber shopping malls	Value of transaction (concept of turn-over)	M	-	T+40 days	-	
13. Consumer sentiment index	Consumer attitudes toward the economic trends, particularly cyclical expansions and recessions	M	-	T+17 days	-	Based on a sample of 2,000 households in urban area. The reference period is the week containing the 22 <sup>nd</sup> day of the month.
14. Employment and unemployment	Employment by industry and occupations, etc.	M	-	T+17 days	-	Based on a sample of 30,000 households. The reference period is the week containing the 15 <sup>th</sup> day of the month. Data collection is carried out during the week following the reference week.

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15. Household income and expenditure	Average monthly income and expenditures per household, excluding single-person households	Q	-	T+85 days	-	Based on a sample of 5,200 households in urban area.
16. Internal migration	Number of migrants by geographical migration stream	Q	-	T+80 days	-	Based on Resident Register reported to KNSO by local governments.
<b>(Bank of Korea)</b>						
1. GDP	GDP statistics from the production approach and the expenditure approach at constant and current prices	Q	T+70 days	T+15 months	* Refer the footnote 3.	
2. Balance of payments	A summary of the money flowing in and out of a country, comprised of two key elements – the current balance and the capital balance	M	T+30 days	Monthly and annual BOPs are finalized during June-July in the following year.	Revision is made when there is a change of over US\$30 millions a month in export/import data.	Based on trade data from the Korea Customs Service and on foreign exchange transactions' data from banks.
3. Producer price indices	The rate of price changes of domestically produced goods and selected services industries	M	-	T+(1~3) days	-	Based on 949 items (874 commodities and 75 items in service sector). The representativeness is 85.6 %.
4. Export and import price indices	To measure the influence of export and import prices on domestic prices.	M	-	T+15 days	-	The number of selected commodities are 220 items for exports and 223 for imports.
5. Indices of foreign trade (unit value index and volume index)	To measure the terms of trade	M	T+45 days	The same as BOP	At the end of March in the	Estimates (decomposition of value index into unit value index and volume index through the Paasche formula) based on

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6. Business survey index	The expectations of business executives for future and present economic conditions.	M	-	T+7 days	following year.	the trade data from the Korea Customs Service.
7. Reserve money, M1, M2, MCT	Measures of money supply	M	T+10 days	T+50 days	-	Based on 2,893 enterprises.
8. M3	Money supply in the broadest concept, including assets that are least liquid and least subject to the central bank influence.	M	-	T+60 days	-	In case of M1, the seasonal adjustment has been done since 1998.
9. Interest rates	Average weighted interest rates on new deposits/loans and discounts	M	-	T+30 days	-	This indicator has been compiled since 1998.
10. Flow of funds	Flow of funds among economic sectors (financial, corporate, government, etc.)	Q	T+80 days	T+17 months	-	It has been compiled since 1965.
11. Household credit	Outstanding value of household credit	Q	-	T+70 days	-	Based on a survey of various type of institutions and data from the national accounts.
12. International reserves	Foreign exchanges (currencies, deposits, securities), SDRs, gold, etc.	Half month	-	Within 5 business days	-	Based on a survey of financial institutions.
<b>(Ministry of Finance and Economy)</b>						
1. External liabilities and assets	External liabilities and assets by institutions (public, domestic financial institutions, branches of foreign banks, private)	M	T+40 days	T+2~3 months.	-	Monthly figures are the total amount cumulated up to the corresponding month.



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3. Land price trend	Land price by counties and cities. Information assessing asset price movements and wealth effect.	Q	-	T+30 days	-	Based on a sample of 45,000 sites nationwide ( <a href="http://www.koland.co.kr">http://www.koland.co.kr</a> ).
4. Number of motor vehicles registered	Statistics on the demography of motor vehicles.	M	-	T+15 days	-	Reported data to the ministry from the local governments. It started in 1975.
<b>(Ministry of Labour)</b>						
1. Wages, hours of work and labour mobility	Monthly wages, actual hours of work, etc. One of variables for inflation analysis.	M	-	T+2 months	-	Based on Monthly Labour Survey which covers a sample of 5,300 establishments as of the end of 2001 ( <a href="http://www.molab.go.kr">http://www.molab.go.kr</a> ).
2. Number of monthly claimants for the unemployment benefit	Number of claimants registered.	M	-	T+2 months	-	Data are available at Monthly Statistics on Employment Insurance of the Human Resources Development ( <a href="http://www.work.go.kr">http://www.work.go.kr</a> ).
<b>(Financial Supervisory Commission)</b>						
1. Data on non-performing loans (NPLs)	Loans 3 months or more past due and loans in non-accrual status	Q	-	T+40 days	-	Based on the survey of 1,565 domestic financial institutions. Data are available at <a href="http://www.fss.or.kr">http://www.fss.or.kr</a> .
2. Foreign portfolio investment	Number of investors and value of investment, etc.	M	-	T+40 days	-	Data are available at <a href="http://www.kisc.or.kr">http://www.kisc.or.kr</a> .
<b>(Korea International Trade Association)</b>						
1. Merchandise trade by SITC (Standard International Trade Classification)		M	T+3 days	T+3 weeks	-	Data are available at <a href="http://stat.kita.net">http://stat.kita.net</a> . Korea Customs Service provides merchandise trade data by the classification of Harmonized System. These data are released at the middle of

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<p><b>(Korea Chamber of Commerce)</b></p> <p>1. Retail business survey index</p> <p><b>(Kookmin Bank)</b></p> <p>1. House price trend</p>	<p>Retail trade opinion survey</p> <p>House price trend and trend of monthly housing rents</p>	<p>Q</p> <p>M</p>	<p>-</p> <p>-</p>	<p>T-3 days</p> <p>T+10 days month</p>	<p>-</p> <p>-</p>	<p>the following month (<a href="http://www.customs.go.kr">http://www.customs.go.kr</a>).</p> <p>Based on a sample of 855 enterprises in retail trade.</p> <p>Based on a sample of estate agents, which cover 3,260 houses. The reference date is the 15<sup>th</sup> day of the month. Data are collected during 15<sup>th</sup>~20<sup>th</sup> each month (<a href="http://est.kbstar.com">http://est.kbstar.com</a>).</p>
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Notes: 1) T refers to the reference month or the reference quarter. Thus, “T+30 days” refers to the end of the following month (quarter) or within 30 days after the month (quarter).

2) For most of statistics in the above table, revisions (rebasings) are conducted every five years. However, these kinds of revision work is not marked in the column of the “Revision”.

3) In case of quarterly GDP data, they are revised when the figures for the next quarter are first published. They are subject to further revision when the figures for the full year are released (usually at the end of March in the following year). The annual and quarterly figures can also be changed when the annual estimates for the following year are published. This means that the annual and the quarterly preliminary estimates are finalized at 15 months after the year.

Sources: 1) Web sites of the institutions concerned. Major economic data are also available at web sites of KNSO (<http://www.nso.go.kr>), the Bank of Korea (<http://www.bok.or.kr>) and Korea Research Institute of Finance ([http://www.kif.re.kr/kifkorean/major\\_economic\\_data\\_a.html](http://www.kif.re.kr/kifkorean/major_economic_data_a.html)).

2) The Bank of Korea, Guide to Economic Statistics, April 2001.

3) IMF, Draft Report on the Observance of Standards and Codes: Data Module – Korea, 2001 (If this will be published, it will be shown in the following web site: <http://dsbb.imf.org/Applications/web/dqrs/dqrsocs/>).

Annex Table 2: Overview of Korean Practice Compared to the Timeliness Requirements of the ECB and Eurostat

	ECB requirement	Eurostat requirement	Korea's practice
<b>A. Prices and costs</b>			
- Consumer price index	T+15	T+18	T+0
- Producer price index	T+30~40	T+35	T+1~3
- Producer prices of the service sector	Not made		
- Compensation in short-term statistics	T+40~50		
- Gross wages and salaries in short-term statistics	T+40~50	T+90	T+60
- Compensation in national accounts	T+60~70		
- Wages and salaries in national accounts	T+60~70		
- Average labour costs (or prices) and earnings	T+75		
- Unit labour costs and wage costs	T+75	T+12 weeks	T+120
- Export and import price indices	T+30~40		T+15
- Export and import unit values	Not made		T+45
- Raw material (commodity) prices*	T+5		
- Residential property prices*	T+60		T+10
- Wage settlements*	Not made		
<b>B. Demand and output</b>			
- Quarterly and annual national accounts for main aggregates for the economy	T+60~70	T+120	T+70
- Quarterly national accounts by sector (except capital accounts)	T+90		
- Quarterly capital account by sector	T+90		
- Annual national accounts including detailed sector accounts (in more detail than quarterly accounts)	T+180~240		T+90 (final after 15 M)
- Industrial production	T+30~40	T+45	T+30
- Turnover in industry*	T+40	T+60	
- Industry new orders received (or stock of orders)	T+30~40	T+50	T+60
- Building permits (or housing starts)*	T+40	T+90	T+30
- New orders received in construction		T+90	
- Cost index – new residential buildings		T+90	
- Production index in construction		T+60	T+15
- Car sales and registration*	Not made	T+15	T+30
- Retail trade turnover (nominal and at constant prices)	T+30~40	T+60	T+40~45
- Output (turnover) in main service sectors	T+30~40	T+2	T+7
- Industry opinion survey (for monthly data)	T+1	T+2	
- Retail trade and service sector opinion survey		T+2	

<ul style="list-style-type: none"> <li>- Consumer opinion survey (for monthly data)</li> <li>- External trade (with non-euro area countries) - aggregates - details</li> </ul>	<p>T+1 T+1 T+40 T+60</p>	<p>T+2 T+6 weeks T+10 weeks</p>	<p>T+17 T+3 T+21</p>
<p><b>C. Government non-financial accounts</b></p> <ul style="list-style-type: none"> <li>- Annual government revenue and expenditure</li> <li>- Quarterly government revenue and expenditure</li> <li>- Quarterly government accounts</li> <li>- Annual government accounts*</li> </ul>	<p>T+90 (revision after T+240) T+90 T+90 T+240</p>		<p>T+330 T+40</p>
<p><b>D. Labour market</b></p> <ul style="list-style-type: none"> <li>- Employment and employees - short-term statistics <ul style="list-style-type: none"> <li>- national accounts</li> <li>- labour force survey</li> </ul> </li> <li>- Unemployment</li> <li>- Hours worked - short-term statistics <ul style="list-style-type: none"> <li>- national accounts</li> </ul> </li> <li>- Vacancies</li> <li>- Measures of underemployment and the labour reserve*</li> <li>- Measures of overtime*</li> <li>- Flow measures of unemployment and employment*</li> </ul>	<p>T+40~50 T+60~70 T+35~45 T+30~40 (earlier for register data) T+40~50 T+60~70 T+30~40 T+90 T+60~70 Not made</p>	<p>T+90 T+5 weeks T+90</p>	<p>T+17 T+60</p>
<p><b>E. Monetary and financial indicators</b></p> <ul style="list-style-type: none"> <li>- An aggregated balance sheet covering the positions of monetary financial institutions</li> <li>- Quarterly detailed data on the above</li> <li>- Balance of payments</li> <li>- Quarterly detailed data on BOPs</li> <li>- International reserve template</li> <li>- Annual international investment position</li> <li>- Central bank interest rates</li> <li>- Day-to-day money market interest rates</li> <li>- 3-month interest rates</li> <li>- Euro-yields</li> <li>- Long-term government bond yields</li> </ul>	<p>T+15 working days T+28 working days T+30 working days Within 3 months Within 3 weeks Within 9 months</p>	<p>T+60 T+90 T+2 working days T+12 working days T+12 working days T+2 working days T+12 working days</p>	<p>T+30 T+30 T+15 months</p>

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<ul style="list-style-type: none"> <li>- Exchange rates against the euro</li> <li>- Nominal and real effective exchange rates</li> <li>- Money supply</li> <li>- Loans to residents by monetary financial institutions</li> <li>- Stock market capitalisation</li> <li>- Share price indices</li> <li>- Foreign official reserves, including gold</li> </ul>		<ul style="list-style-type: none"> <li>T+2 working days</li> <li>T+12 working days</li> <li>T+20 working days</li> <li>T+21 working days</li> <li>T+20 working days</li> <li>T+5 working days</li> <li>T+24 working days</li> </ul>	<ul style="list-style-type: none"> <li>T+10</li> <li>T+5</li> </ul>
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Notes: 1) “T+x” refers the “x” days after the reference period.

2) Asterisk (\*) refers the important indicators with medium priority by the European Central Bank. This implies that the others are essential indicators with highest priority.

3) Unless there is any special mention such as quarterly or annual, the periodicity of the data is on a monthly basis.

Sources: 1) European Central Bank (ECB), Statistical Requirements of the ECB in the field of General Economic Statistics, Monthly Bulletin, August 2000.

2) ECB, Statistical Information collected and compiled by the ECB, Monthly Bulletin, May 2000.

3) Metadata of Eurostat euro indicators, available at the following Eurostat’s web site.  
<http://europa.eu.int/comm/eurostat/newcronos/info/notmeth/en/theme1/euroind.htm>.

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**Annex Table 3: Comparison of Days Taken for Data Finalization between USA and Korea**

	USA				Korea			
	Preliminary	Final (1)	Annual revision	Source agency & others	Preliminary	Final	Annual revision	Source agency & others
- Retail trade index	T+15	T+75	March	BOC.	T+30	T+60	Feb.	Korea National Statistical Office (KNSO)
- Manufacturers report (shipments, inventories, orders)	T+30	T+60	Yes	Advanced report on durable goods orders is released on T+21.	T+30	T+60	Feb.	
- Housing starts	T+18	T+78	No	Annual revision is done as part of the revision of BOPs.	-	T+60	No	Ministry of Construction
- Balance of trade	T+45 ~50	T+160 ~165	June		t+3	T+21	No	Korea Customs Service
- Employment report (non-farm payrolls, average hourly earnings)	T+5	T+65	June	Bureau of Labour Statistics (BLS).	-	T+60	No	Ministry of Labour
- Unemployment rate from the household survey	-	T+5	(Jan.)	S.A. data are revised annually.	-	T+17	4)	KNSO
- Consumer price index	-	T+16	(Jan.)	S.A data are revised annually.	-	T+0	No	KNSO
- Producer price index	T+13	T+133	No		-	T+1~3	No	Bank of Korea (BOK)
- Unit labour cost	T+60	T+150	N.A.		-	T+120	No	Labour Productivity Center
- Quarterly GDP	T+55	T+90 2)	Summer	Bureau of Economic Analysis (BEA), Advanced report is released on T+25.	T+70	T+15 month	5)	BOK
- Balance of payments	T+70 ~75	T+160 ~165	June		T+30	-	6)	BOK
- Industrial production index	T+15	T+105	Fall	Federal Reserve Board.	T+30	T+60	Feb.	KNSO
- Monetary aggregates (M1, M2)	T+10	T+10		Revised on a continuing basis.	T+10	T+50	No	BOK
- Monetary aggregates (M3)	T+10	T+10		Revised on a continuing basis.	-	T+60	No	BOK
- Leading index	-	T+180	Dec. 3)	The Conference Board	T+30	T+60	3)	KNSO
- Consumer confidence index	T-3	T+27	No	The Conference Board	-	T+17	No	KNSO
- Purchasing managers' index	-	T+2	January	Association of Purchasing Management	-	T+7	No	Business survey index of BOK

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Note: 1) Generally, in US, data are initially revised in the subsequent month(s); they are subsequently revised based on an annual benchmark information usually by March (or June) in the following year.

- 2) In case of quarterly GDP in US, initial data (advanced report) are revised in the subsequent two months (referred to as “preliminary” and “final”, respectively), with more detailed revisions made annually every summer, and still more comprehensive benchmark revisions made about every five years.
- 3) Comprehensive revisions in the components and the methodology in the leading index do not follow a regular schedule both in the US and Korea.
- 4) Unemployment data from a household survey are subject to revision corresponding to the revision of the results of the population projection every five year.
- 5) In case of quarterly GDP data in Korea, they are revised when the figures for the next quarter are first published. They are subject to further revision when the figures for the full year are released (usually at the end of March in the following year). The annual and quarterly figures can also be changed when the annual estimates for the following year are published. This means that the annual and the quarterly preliminary estimates are finalized at 15 months after the year.
- 6) Monthly and annual data on BOPs in Korea are finalized during June-July in the following year. Revision is also made when there is a change of over US\$ 30 millions a month in export/import data.

Sources: 1) Norman Frumkin, Guide to Economic Indicators, 3<sup>rd</sup> Edition, M.E.Sharpe, 2000

2) US Census Bureau’s Principal Economic Indicator Program, Paper presented at OECD Short-term Economic Statistics Expert Group meeting, 24~25 June 2002.

3) Eurostat, Report of the Task Force on Benchmarking in Infra-Annual Economic Statistics to the SPC, 2001.

4) Understanding of US Major Economic Indicators (in Korean), <http://www.priden.com/corporate/inter/interlib/foredu/>

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**Annex Table 4: Preliminary and Revised Data for Each Reference Month – Industrial Production Index, 1995=100.0**

	2001.3	4	5	6	7	8	9	10	11	12	2002.1	2	3
2001.3	160.4	160.7	160.7	160.7	160.7	160.7	160.7	160.7	160.7	160.7	160.7	160.7	160.7
4		155.6	155.5	155.5	155.5	155.5	155.5	155.5	155.5	155.5	155.5	155.5	155.5
5			157.6	157.6	157.6	157.6	157.6	157.6	157.6	157.6	157.6	157.6	157.6
6				151.5	151.3	151.3	151.3	151.3	151.3	151.3	151.3	151.3	151.3
7					148.9	149.2	149.2	149.2	149.2	149.2	149.2	149.2	149.2
8						151.7	152.2	152.2	152.2	152.2	152.2	152.2	152.2
9							162.8	162.8	162.8	162.8	162.8	162.8	162.8
10								162.6	162.6	162.6	162.6	162.6	162.6
11									170.3	170.4	170.4	170.4	170.4
12										164.7	164.7	164.7	164.7
2002.1											162.2	161.9	161.9
2												142.5	142.4
3													167.6

**Annex Table 4 (continued): Preliminary and Revised Data for Each Reference Month – Growth Rate of Service Industry Activities**

	2001.3	4	5	6	7	8	9	10	11	12	2002.1	2	3
2001.3	5.5	5.3	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
4		7.3	6.3	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
5			7.9	7.9	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
6				4.9	5.0	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
7					4.7	4.1	3.3	3.3	3.3	3.3	3.3	3.3	3.3
8						6.7	5.6	4.3	4.3	4.3	4.3	4.3	4.3
9							7.2	6.9	6.5	6.5	6.5	6.5	6.5
10								6.3	5.5	5.6	5.6	5.6	5.6
11									7.9	7.8	7.8	7.8	7.8
12										8.2	8.4	8.3	8.3
2002.1											9.7	9.8	9.7
2												6.7	7.2
3													10.2

Note: Growth rates are based on the data over the same month of the previous year.

**Annex Table 4 (continued): Preliminary and Revised Data for Each Reference Month – Growth Rate of Wholesale & Retail Trade**

	2001.3	4	5	6	7	8	9	10	11	12	2002.1	2	3
2001.3	3.7	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
4		3.9	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
5			4.9	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
6				4.1	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
7					2.5	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
8						3.5	3.6	3.6	3.6	3.6	3.6	3.6	3.6
9							7.7	7.8	7.8	7.8	7.8	7.8	7.8
10								4.6	4.6	4.6	4.6	4.6	4.6
11									6.5	6.5	6.5	6.5	6.5
12										7.9	8.1	8.1	8.1
2002.1											7.3	7.3	7.3
2												8.2	8.1
3													8.2

**Annex Table 4 (continued): Preliminary and Revised Data for Each Reference Month – Leading Index**

	2001.3	4	5	6	7	8	9	10	11	12	2002.1	2	3
2001.3	132.6	132.4	132.4	132.4	132.4	132.4	132.4	132.4	132.4	132.4	134.4	134.4	134.4
4		132.5	132.5	132.5	132.5	132.5	132.5	132.5	132.5	132.5	134.5	134.5	134.5
5			132.4	132.6	132.6	132.6	132.6	132.6	132.6	132.6	135.2	135.2	135.2
6				133.2	133.1	133.2	133.2	133.2	133.2	133.2	135.8	135.8	135.8
7					133.5	133.6	133.6	133.6	133.6	133.6	136.2	136.2	136.2
8						134.2	134.1	134.1	134.1	134.1	136.4	136.4	136.4
9							135.7	136.2	136.2	136.2	138.4	138.4	138.4
10								136.8	136.9	136.9	139.2	139.2	139.2
11									138.5	138.5	140.8	140.8	140.8
12										138.1	140.5	140.5	140.5
2002.1											143.1	142.9	143.1
2												143.7	143.8
3													147.0

**Annex Table 4 (continued): Preliminary and Revised Data for Each Reference Month – Balance of Payments (current account) in million US\$**

	2001.3	4	5	6	7	8	9	10	11	12	2002.1	2	3	2003.3
2001.3	1,810	1,810	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	2003.3
4		640	590	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	1,595
5			2,300	2,160	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	535
6				1,040	1,050	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	2,184
7					510	440	n.a	n.a	n.a	n.a	n.a	n.a	n.a	1,063
8						- 110	- 190	n.a	n.a	n.a	n.a	n.a	n.a	501
9							820	710	n.a	n.a	n.a	n.a	n.a	- 230
10								340	250	n.a	n.a	n.a	n.a	969
11									700	n.a.	740	n.a	n.a	190
12										1,390	20	n.a	n.a	512
2002.1											330	330	n.a	-168
2												440	n.a	260
3													380	363
													1,090	969

Note: 1) The web site of the Bank of Korea (monthly reports for news media) provides data only for two months (preliminary and revised one). This is the reason of non-availability of data for other months.

2) The data shown in the last column of this table refer the most recent data available as of March 2003. These data can be regarded as the final for the reference months shown in the above table.