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**Report of the  
Task Force on  
Benchmarking in Infra-Annual  
Economic Statistics  
to the SPC  
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**Annex 4  
INTRA-EU STUDY**

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## Annex 4

### Intra-EU Study

#### 0. SUMMARY

The Task Force conducted an intra-EU study with the emphasis on timeliness. Information was collected through questions about frequency, different releases, and reference period of the statistics and in the data collection (for example a day or a week within the month); furthermore about the main criteria determining the production time and possibilities to reduce this time. Questions on data collection, sample size, non-response rates, estimation models, and accuracy were included, and so was coherence with annual statistics. There were also possibilities to provide comments. A set of twelve indicators was chosen from the EMU Action Plan. There is at least one variable/indicator from each of the five main domains, and there is a broad coverage of industries and types of variables. The same questionnaire was used for all indicators, except that some modifications were made for GDP. The detailed responses are available separately.

<i>Domain</i>	<i>Indicator</i>
Quarterly National Accounts	1. Gross Domestic Product
Quarterly Public Finance	2. Taxes
Labour Market Statistics	3. Labour Cost Index 4. Continuous Labour Force Survey 5. Employment, domestic concept
Short-term Statistics	6. Industry, Production 7. Industry, Number of persons employed 8. Industry, Output prices, domestic market 9. Construction, Production 10. Retail trade, Turnover 11. Services, Turnover
External trade	12. Detailed extra-EU

Sections 1-12 report on the results by indicator. To keep texts and tables short, countries are denoted by two-letter abbreviations (picked from the Action Plan Tables). In this description, production and release times are taken from the survey response; with the exception that tables related to the Action Plan have been used for missing data (marked with a '?'). This is the case for Belgium, partly for France (indicator number 2, 3, 7, 12), and for the indicator Employment, domestic concept, where some countries are missing (IT, LU, PT). Release time – the user perspective – is used in tables rather than the time needed for the producer. Eurostat has filled in the questionnaires, too, and this is summarised in Section 13.

Some indicators have a tradition, at least in several countries, whereas others are fairly new or renewed. In particular, there is a tradition for statistics on goods – production and domestic and foreign trade – whereas statistics for services, labour costs, and public finances are less developed. It is evident that Services-Turnover (in addition to Retail Trade) is not yet in place in several countries or restricted to some service industries. A continuous Labour Force Survey (LFS) has still not been implemented in several countries. Labour Cost Index (LCI) is under development or in an early stage, and it is still for several countries somewhat of a delivery to Eurostat rather than established national statistics. This is even more the case for Taxes. Statistics on Construction-Production are also under development in several countries; a few countries now have such statistics mainly as a part of the Quarterly National Accounts (QNA).

Accuracy measures differ between indicators and countries. Sampling variances are calculated for household/individual statistics, but only rarely for business statistics (a difference in tradition). Also, to derive such measures is in many cases difficult for business statistics due to complex parameters, estimators, and/or design. A few countries have measures in place or point at ongoing developments, e.g. for LCI. Revision size is much used – the interpretation and usefulness as a measure of accuracy depend, of course, on what the revisions encompass. It may be just late responses. It may be more, for example when benchmarking to annual statistics. Revisions are studied in many countries. They may be monitored, and there may be targets (especially UK). Numerical values have been provided, but only in some cases and not enough to achieve an overall picture. Comparisons with other sources on aggregate and on unit level are mentioned as ways to analyse and ensure accuracy – in addition to plausibility checks.

There are differences between countries in data sources and data collection modes. Some countries have a tradition with use of administrative data, most notably DK and FI. They use administrative data for a considerable number of the indicators studied, whereas many other countries have administrative registers only for a few cases, in particular Taxes. Several types of sources are used for data collection, for example social security files and files from employers and industry associations. Such information is received electronically. Mail is still fairly dominant as data collection mode from businesses, but there are also other modes, such as electronic questionnaires, e-mail from businesses, and touchtone data entry. Fax is used quite a lot, and telephone is used for reminders, late responses, and during editing. There are also personal visits to businesses, at least as a start, in a few countries (GR, and NL for producer prices). There is often a mixture of modes in data collection from businesses. Labour data from households/individuals are collected either through visits using questionnaires (possibly computer assisted) or through telephone interviews with CATI (computer assisted telephone interviewing) as the only or the main mode, and then complemented with visits or mail.

Estimation models are used for different purposes, to different extents, and in different ways. Again, there is a considerable variation between both indicators and countries. The models may have not only statistical but also econometric elements. This is so for NA but also in other cases. FR uses econometric models with relationships between indicators and variables, so do other south-European countries especially for QNA. Adjustment for non-response is standard; then a previous response is often used, possibly also rate of change for respondents. Assumptions are made, explicitly or implicitly, for example when changes are

measured in cut-off surveys. Time series models are used for seasonal adjustments and to some extent for forecasting. There are cases where the third month in the quarter is estimated, for example with ARIMA models (LU and UK). There are also design-based estimation methods, such as post-stratification (FI and DK). Infra-annual statistics are in some cases benchmarked to annual statistics. – Conversely, infra-annual statistics are in some cases used to compute the annual statistics, depending on indicator and country.

A sub-period instead of the full reference period is used in a few cases (more details in Sections 1-12). This is so especially for the industry domestic output price index, where six countries (ES, DK, FI, GR, IE, PT) use the 15<sup>th</sup> day of the month, or nearly so, but with some exceptions for some products. Furthermore, DE has mostly the 21<sup>st</sup> of the month, and UK measures the price of the specified product for a transaction that took place in the reference month, recording the date. LCI is a second such indicator, where notably DE and PT use the first month of the quarter, and DK uses a wage period containing a specific date in the mid-month of the quarter. Industry employment is the third case, where especially: SE and UK use a day within the month, and IE has a particular week in the third month of the quarter.

The main criteria for the production time are of a few different types; a simple summary with five headlines follows:

- international guidelines/regulations
- national requests
- time for respondents, collection, validation, sufficient quality (e.g. response rate)
- availability of data from administrative sources
- release calendar including coordination with other statistics

The relative strengths of these criteria vary between countries and indicators. Especially international but also national requests are stated – for many respondents these criteria may be too obvious to have been mentioned. Overall, timeliness has high priority. It has to be balanced against other issues; typically the response rate is mentioned, or accuracy more in general. In some cases a minimum response rate is stated, for example 70% or 80%. When administrative data are used, the timetable is strongly dependent on the availability of these data, even if a first release may be based on incomplete information. Some countries have a strong integration between several indicators, for example between several labour market indicators or between survey statistics and the national accounts. UK has ties to NA from the first publication, whereas NL makes alignments at later stages. Most, but not all, have a release calendar. In some cases, a certain weekday is used, which implies a variation in production time. The release calendar is a pressure. If it is decided long in advance, it is likely to include a safety margin, which causes a delay.

The question about shortening the production time is answered in the positive by some, referring to possibilities such as:

- new data collection techniques
- more effective production systems
- improved contacts with enterprises
- a use of further sources
- more use of models

On the other hand, there are also negative answers. There is a great concern about a high non-response and a lower accuracy in early statistics.

Several rounds of releases are used in some but not very many cases. QNA is an example with both preliminary and regular releases in several countries. Industry-production and Retail trade, turnover, are published with less detail first and more detail later in several countries, and so is Services-turnover in a few countries. Many countries update their statistics, especially with regard to late responses, but in many cases without calling it a new release.

There is a considerable variation in release time between indicators (and countries). The two more traditional indicators 6 and 8, Industry-production and Output prices, are released after a relatively short time in all countries: 37-65 days and 8-45 days, respectively. Similarly, indicator 12, Extra-EU foreign trade, takes 20-56 days (3-8 weeks). For some more recently introduced indicators there are longer delays until the release. Indicator number 2, Taxes, has a fairly small deviation around 90 days. Indicator 5 varies partly due to the definition used.

There are differences between countries in production time, but not the same for all indicators. The table below shows by indicator the three countries, or so, which are first to release. It also shows the number of calendar days after the reference period to the release. Figures are not always comparable. A star (\*) after the figure signals special deviations. Many countries are represented. UK is most frequent.

<i>Indicator</i>		<i>Countries with the shortest release times</i>	<i>Notes<sup>1</sup></i>
1.	Gross Domestic Product	UK(25) IT(45) NL(45)	Q
2.	Taxes	DE(70) SE(75) UK(80)	Q
3.	Labour Cost Index	UK(42-47)Q PT(50)Qw SE(56-63)M	mix,w
4.	Continuous Labour Force Survey	SE(17) FI(21) FR(30*) NL(42*) ES(43)	mix
5.	Employment, domestic concept	SE(17)LFS ES(43)LFS DK(50)Q UK(50)LFS	mix
6.	Industry, production	DK(37) UK(37) DE(38) – FI adv.(28)	M
7.	Industry, number of persons empl.	FI(21)LFS UK(40-45)Mw ES(43)LFS	mix,w
8.	Industry, output prices, domestic	UK(8-14)trans FI(~18)mid IE(~24)mid	M,w
9.	Construction, production	DE(40)M NL(47)Q UK(49-56)Q; BE(40?)	mix
10.	Retail trade, turnover	UK(18) FR(24*) DK(36/66) NL(39)	M
11.	Services, turnover	UK(25)Q DE(34,45)M SE(45-50)Q	mix
12.	Detailed extra-EU	UK(20-25) IT(30) NL(38); BE(36?)	M

There does not seem to be one or a few simple explanations behind timeliness. Some

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<sup>1</sup> When the frequency for indicators across EU-countries is the same, M=monthly and Q=quarterly are used; when the frequency of indicators differs across EU-countries, the entry 'mix = mixed frequencies' is used. In a few cases sub-periods within the reference period are used, which are denoted by w = within the period; e.g. mid-week or mid-month. Information is provided by country where needed. For more details and explanations see Sections 1-12.

examples are given here. The first action, mentioned by UK and several others, is to give timeliness a high priority and set targets.

Germany has rather short production times compared with other Member States, though the basic data are normally prepared by the Statistical Offices of the Länder. This results from a long tradition. In the last two years the data needs of the European Central Bank were given highest priority in the production of statistics, and the "ECB-indicators" are part of a strong controlling system. Significant improvements were possible. The up-to-date monthly data made it possible to improve the timelessness of QNA from 70 days after the end of a quarter in 1999, over 60 days in 2000 to 55 days in 2001.

The Swedish LFS, which is published 2½ weeks after the month, uses standardised procedures. There is a short period for fieldwork towards the end, and the analyses before the press release are standard ones. Further Swedish experience with short production times mentions contacts and data collection techniques, e.g. touchtone data entry. The Finnish LFS has been redesigned in the last few years to meet EU requirements and national statistical information needs. CATI is used, and the questionnaire is programmed with built-in data editing. There is automatic coding. Manual processing is minimised. Up-to-date statistical procedures are used for estimation. Tabulation procedures are integrated in the production process.

The Finnish industrial production index states telephone contacts with late respondents as the most important element in shortening the production time by two weeks (from 45 to 30 days). Two years ago the response rate was 99% after 41 days; now that rate is achieved after 29 days. Streamlining programs and high recognition of the index among users including respondents are also mentioned. UK has central data validation, parallel processing, and a high proportion of scanning. Denmark emphasises focus on timeliness, contacts with the respondents (with efforts on motivation, questionnaires, different data collection modes, reminder policy, and feedback) and consciousness of response burden.

Statistics for the EU (with the Euro area as an important part) are obtained by aggregating national statistics. Viewed on this aggregated level, the sample sizes are in general large. There are different methods to produce early statistics at a higher level of aggregation. One possibility is to use a sub-sample – a part of the regular national sample – with short(er) times for respondents and priority in the national processing. This is discussed in other parts of the report.

## **1. QUARTERLY NA, GROSS DOMESTIC PRODUCT; GDP**

Most countries (AT, DE, DK, ES, FI, GR, IE, PT) have just one release for Quarterly National Accounts (QNA) each quarter. At the same time earlier quarters may be updated. Five countries have two or even three releases; with one exception for all four quarters:

- FR has both preliminary and detailed GDP; 55 and 100 days
- IT has preliminary (flash) and regular estimates; 45 and 80 days
- NL has preliminary and regular releases; 45 and 105 days
- SE has a release "flash estimates" for the second quarter only; 37 and ~ 74 days

- UK has three releases: preliminary GDP, Output-Income-Expenditure, and QNA; production times are about 21-28, 49-56, and 84-91 days

In FR, the preliminary release provides supply and demand accounts; the detailed release provides in addition institutional sectors accounts. In IT, the preliminary release has only GDP at constant prices and seasonally adjusted. In NL, the preliminary estimate is more aggregate; for example only three groups of producers, no breakdown of investment by type of capital good, no information on the income approach. In SE, the flash is more aggregate and in principle only at constant prices. For UK, (i) the first preliminary GDP consists of GDP compiled by the production approach only, (ii) the second release Output, Income and Expenditure consists of GDP compiled from the three separate approaches and associated sub-aggregates, and (iii) the third release Quarterly National Accounts expands the detail published in the second release.

The time in calendar days after the quarter to the first and regular release is shown in the table below. Most countries have stated an average; a few have given figures by quarter. ES has for the quarters 52, 81, 81, 80 days; 74 days on average. SE has around 74, 88, 74, 69 days, respectively, for the four quarters. IE has 180 days currently, and the target 120 days for Q4 in 2001. LU has 4 months in the starting period.

AT	BE	DE	DK	ES	FI	FR	GR	IE	IT	LU	NL	PT	SE	UK
90	60?	55	85-90	~ 74	80	55 100	--	180	45 80	120	45 105	120	[ 37 ] ~ 74	21-28 49-56

Among the main criteria for the publication time, availability of the (most) basic sources is the dominating criterion. International guidelines and regulations are also mentioned by a few.

The degree of monthly sources varies. In FI the main part is monthly. For AT nearly all input is monthly in the first round, whereas revisions to a larger extent are based on quarterly sources. DE has about 65% of GDP by origin and 55% of the final uses of goods and services covered by monthly indicators. For DK it is about 10% of domestic output and 100% of foreign trade. In FR most indicators are monthly for supply-demand accounts, but for institutional sector accounts most are quarterly. IE has a considerable amount of monthly series (industrial production, retail sales, external trade, government finances), but some available only on a quarterly basis (stocks, investment, and earnings). LU has monthly industrial production, turnover, number of employees, and salaries. UK emphasises Index of Production and Retail Sales Index monthly; also trade, government, prices, employment, and earnings data. NL is similar, listing also Consumer and Producer Prices and the Construction Index monthly. NL emphasises imports and exports as being different between GDP versions; only two months of the quarter are available for the preliminary estimate. SE states that "normal" QNA use monthly statistics to a small degree (even if price data, foreign trade, and employment data are monthly), whereas the flash for the second quarter uses partly different sources, of which more are monthly. GR points at CPI and Import Indices monthly. ES sees no special role for monthly indicators. IT has monthly sources that are temporally aggregated and estimates quarterly NA through indirect methods with temporal disaggregation.

When it comes to shortening the production time, there are some different reactions. Some countries emphasise the lack of and hence need for more timely basic statistics, whereas others emphasise that only two months out of three would be available. The conclusion for the production time is that a reduction is not possible (e.g. DE) or that model estimation is needed. For example, FR points at extrapolation (and larger revisions), and NL at early estimates of the third month at a high aggregation level. PT stresses the importance of external trade and price indices. The answers are to some extent dependent on the present situation, i.e. the strength of the request. UK meets already both the Action Plan and 30 days. For LU it is too early to discuss. It is early for GR too; GR states timeliness of some indices as important.

As for an early release, few countries respond in the positive. DK says yes, 60 days. NL has just speeded up the first estimate to around 45 days. SE states no plans but ongoing discussions. AT says only if EMU Action Plan creates such an obligation. FI alone has a monthly estimate. NL has, however, plans to explore this possibility.

Under the heading of working conditions (with few responses), LU states only 2 persons on QNA (out of 9.5 in NA division), and ES says a small staff (4 people). FR notes the French holidays for the second quarter (65 days instead of 55 days).

### **Accuracy and Coherence**

Some different types of estimation models are mentioned. There are time series models for seasonal adjustment (AT, DE, ES) and forecasting of missing values (AT, ES, IE, IT). Disaggregation is also mentioned (ES, PT). UK makes considerable use of ARIMA modelling for the third month and also of proxy information. DE notes estimations performed “manually” by experienced national accountants. DK states not models; but assumptions like fixed input-coefficients in constant prices. FI uses models for estimation of consumption of fixed capital only. In FR, QNA are econometrically estimated (benchmarking on annual accounts, relationships between variables). Hence, models used are different in character: econometric or statistical. One or both types are used. There seems to be a strong emphasis on econometric models especially in FR, IT, ES, and PT, but also in AT and GR, while other countries emphasise statistics (statistical models), at least DE, DK, and NL – with FI, IE, SE, and UK somewhat in-between, using mainly statistical models for some missing parts.

Quarterly NA are coherent with annual NA. Procedures such as Chow-Lin (AT, ES), Denton (DK), and Bassie (FI) are mentioned.

Coming to accuracy measures and indicators, revisions are mentioned by many (DK, ES, FI, FR, IT, NL, SE, UK). There are also accuracy measures related to models used (AT, PT). Descriptions and explanations for revisions give, of course, valuable information to the users of the statistics. In principle there are no deviations between quarterly and annual data, but there are differences during the production process, before benchmarking. Some countries provide numerical values for the accuracy:

- DE: The average dispersion of quarterly growth rates is 0.5 percentage points from the first quarter of 1995 to the fourth quarter of 1999 (first release compared with current situation). One of the factors underlying the dispersion is the large-scale revision performed in April 1999 (introduction of the ESA 95).

- DK: The most recent experience shows that the average revision of the first published real GDP growth rate, compared to the same quarter the year before, amount to about 0.6 percentage points. The survey further shows that there is no systematic tendency to overestimate or underestimate the GDP growth rate in the first publication.
- FI: In 1993 to 2000, the difference between the initial quarterly GDP data and the latest quarterly data has been –0.7 percentage points, on average, with the median at –0.6 percentage points.
- IT: Average revisions are historically about  $\pm 0.15$  on growth rates with respect to the preceding quarter (constant prices). These revisions reflect in great part revisions in the annual figures.
- NL: In general, at an aggregate level the differences between the preliminary and the regular estimate are 0.5 percentage point or less. The difference between the regular QNA-estimate and the first annual estimate from national accounts is about 0.3 percentage point or less.
- UK: Year on year growth rates have been biased in that they have tended to underestimate growth. This bias has reduced in comparison to earlier years as more resources have been allocated. Quarterly growth rates do not show statistically significant bias.

### **Some concluding notes for QNA - GDP**

Most countries have QNA, even though a few have just started. Four countries regularly have also a preliminary version (FR, IT, NL, and UK with two), and FI has a monthly estimate. The production time is strongly dependent on availability of important sources. The possibilities to shorten the production time depend on these sources and on the use of models – the emphasis varies between countries. The present use of models also varies, both in extent and in type of model: statistical and/or econometric. Some countries provide information on direction and size of revisions for GDP or the growth rate.

## **2. QUARTERLY PUBLIC FINANCE, TAXES**

There are differences between this indicator and most of those below. Administrative data are used and administrative rules have a strong influence on timeliness and other quality aspects. Many countries have book-keeping systems as the source, sometimes from the Ministry of Finance. The indicator has quarter as the reference period, with a few exceptions. UK notes that many taxes are available monthly, others quarterly or annual with quarterly interpolation. ES has monthly statistics for the state and quarterly for public administration.

The statistics are under development in several countries. The five countries FI, IE, IT, LU, and SE have no national publications but deliveries to Eurostat. GR publishes four times annually according to Eurostat. DE and UK have taxes as part of NA.

DK has one release per quarter. NL makes two releases, the second due to alignment with NA-figures. AT makes one release per quarter, a brief summary. The figures are preliminary until the August revision. ES has two types of statistics:

There are monthly statistics for the state; data are checked in the second month following the reference month and at the end of the financial year. The quarterly statistics for Public Administration are not published yet; data are checked in the second quarter following the reference quarter and at the end of the financial year

As for level of detail, ES has more detailed statistics when data are checked at the end of the calendar year. AT, DE, and DK have full detail from the beginning. The question is not yet relevant for many countries.

The time in calendar days after the quarter for deliveries to Eurostat is shown in the table below. PT notes that the Regulation is respected and that this Regulation requires social contributions and social benefits as well, which have longer periods than taxes. As for the main criteria for the publication time, AT, GR, IE, and NL point at the Regulation or Eurostat. Some others refer to national statistics not being published yet.

AT	BE	DE	DK	ES	FI	FR	GR	IE	IT	LU	NL	PT	SE	UK
90	92?	70	89	97?	90	100?	90	90	90	90	80-90	90	75	80

As for shortening the production time, several countries (DK, ES, GR, IT, NL, SE) point at availability of administrative data as the determining factor, or at least a major factor. AT states that the production time cannot be considerably reduced. A few countries (IE, LU, PT) note that taxes alone could be quicker; PT says that (20 to) 30 days would be possible. FI points at time adjustments. SE describes the need for the next month to calculate data on an accrual basis. NL observes that a forecast procedure would be needed – not allowed by the Regulation. UK sees disaggregates as the major difficulties.

As for early release, no country has such a plan; some do not yet even have a regular national publication. Under final general comments, AT expresses concern over upcoming non-financial accounts, and so does IE. Coherence of tax data in different reports is an issue for FI; especially with different dates.

### **Accuracy and Coherence**

The sample size has no particular interest here, but the response rate has, since data may be late. Only two countries have replied: IT has 90% response in the first release and 95% in the second (definition not provided). NL has 95% weighted.

As for estimation models, there are a few different ones. DE makes estimates for missing data. DK and DE adjust for time, from paid taxes to accrual accounting. ES estimates for ceded taxes. FI has a model for real estate tax in the first and second quarters. IT may need to estimate the third month or to shift to the accrued period; forecasts are generally obtained by TRAMO-SEATS. There is also temporal disaggregation. NL divides annual taxes equally over the quarters and adapts budget figures based on variations found in the past. PT estimates some small part of local taxes. UK makes, in a few cases, projections and a quarterly path.

As for accuracy measures and indicators, especially deviations between infra-annual and annual data are mentioned (DK, FI, IE, IT, NL). AT notes that they are small. DK mentions in addition revisions. IT states annual NA and forecast's error. (LU

and SE state not applicable, and UK rarely revised, so not a consideration.) A few countries provide numerical values for the accuracy. DK has for personal tax about 99% for quarters and usually better than so in comparison with the annual statistics. FI has only minor deviations; IE finds an excellent coherence, and PT a relatively high reliability.

There is in general coherence with annual statistics; several countries say consistency. IT uses a benchmarking procedure. PT notes that previous quarters can be updated.

### **Some concluding notes for Taxes**

These statistics are specific in being based on administrative data. They are still under development in several countries. The production time is around 90 days with a fairly small variation. A few countries note that this indicator could be produced quicker on its own but that it is part of a system.

### **3. LABOUR COST INDEX, LCI**

It should be noted that the Labour Cost Index, LCI, is still at a fairly preliminary stage. It is for many countries more of a delivery to Eurostat than part of the national statistical system. When it is sent to Eurostat, the indicator LCI has quarter as the reference period in all responding countries. However, LU, SE, and UK (to some extent) have monthly national indicators, from which the quarterly indicator is derived. There is no national publication in AT, DE. At the national level, AT has some monthly results in the manufacturing industries, and in DE there are some published statistics from a quarterly survey of earnings. LU has a different national monthly index on labour costs per person for the whole economy. SE publishes the LCI-indicator monthly.

DK and IT have only a final release, ES only one release, and FI only one publication per year (but data to Eurostat 90 days after the quarter, can be updated; coverage NACE C-K). GR has not published any statistics yet; the survey began in 1999 with a new register. PT has one release per quarter and then publishes revised data from the previous quarter. SE publishes after 8-9 weeks, on the 30<sup>th</sup> of the month, and finally after 6 months. UK has preliminary estimates in the second month after the quarter and a final estimate one month later. NL has 4 quarterly releases, 2 preliminary releases, and a final yearly release, due to alignment with NA-figures. – Publication levels seem to be the same all through.

The survey is mandatory in all countries; in LU declarations by employers are compulsory. The data collection is a mixture in several countries; with both survey(s) and administrative data – such as social security – possibly together with employers' associations. A mail questionnaire is used in many countries. DE mentions also electronic media, and so does AT (from April 2001), together with fax. In DK, there are cases with paper questionnaire, but typically electronic transmission on tape or diskettes. IT has a postal survey, with return by mail, fax, or e-mail. In FI there is cooperation with several employers' associations, data collection from non-associated companies, and supplementary administrative registers.

The release time (and the accuracy) depends partly on the reference period of the data collected. DK uses a wage period containing a specific date in the mid-month of the quarter. DE estimates quarterly results based on earnings of employees the first month of the quarter. ES has three sub-samples, each with a full month. FI has different months in different sources (August in motor trade, October in the rest of the service sector etc.) LU has the end of each month, and PT has the first month of each quarter. NL has week and month (and year) salaries. In UK, the reference period is the last week of each month for employees paid weekly, and for employees paid on a monthly basis the data relate to the complete month. The table shows the release time or time for delivery to Eurostat, number of calendar days after the period. GR has now 2 years due to revision problems but hopes to soon reduce the production period to 6 months. The last row indicates deviations from quarterly release (M for month) and from data not referring to the full quarter (denoted by w for within).

AT	BE	DE	DK	ES	FI	FR	GR	IE	IT	LU	NL	PT	SE	UK
95-100	- ?	75 w	60 w	85-90 (M)	90 (w)	117?	700	-	80	~ 120 (M,w)	89	50 w	56-63 M	42-47 w

As for the main criteria for the publication time, each country gives one or possibly a few criteria along one or more lines. Several (AT, DE, FI, NL) refer to Eurostat or, similarly, to the Action Plan, the Central Bank, European requirements, or international guidelines. Others (SE, UK) coordinate with national requests. Several (e.g. AT, DK, ES, PT) refer to the availability of data, the production process, or the quality.

When it comes to shortening the production time, there is little positive response. UK, which is the current fastest producer, states that not much is currently available for change. Developing technology is mentioned by a few countries, including UK, but together with reservations. FI states that Action Plans have been carried out so far, and also that using several different sources implies time lags and constant revisions. Several others point at the data collection system (administrative sources). PT states two consequences: a decrease of the response rate and an increase in the size of revisions.

As for a change of the period actually used in the data collected, most countries reply 'no'. It depends on the Regulation for FI and LU. When it comes to an early release, the reply is also mostly 'no'. FI again considers the regulation.

### Accuracy and Coherence

The sample size in the eight countries with clear indications varies from 2 500 to 42 000, and the sum is somewhat above 100 000. A few countries have mixed sources.

The response rates also vary. DE has 98%, AT 96%, SE 92%, DK 90%, ES 85-90%, and IT 80% (only large firms). FI reports 80% and 60% for two sources. UK has 80% and 83% in two releases, PT similarly 80-85% and 90-95%. GR had 65% unweighted when the survey was first performed. NL has 65% in the preliminary quarterly publication, increasing to 75-85% for the three first quarters in the preliminary yearly publication.

As for estimation models, some countries (DE, ES, NL) mention non-response. At least SE and DE have a cut-off survey. UK derives estimates from different sources in several steps, and so does FI.

As for accuracy measures and indicators, just a few countries provide values (LCI is still relatively new). SE and UK are developing variance estimators. FI notes that the LCI is based on a number of statistical sources. Annual changes have been compared with those derived from other sources, Structural Business Statistics and NA. Experience seems mixed; rates of changes being closer for the manufacturing industry than for construction. For NL, the difference between the first estimate and the first adjustment to NA-data on average is less than 0.5%. For PT, usually the size of revision is less than 1%. For UK, the quality of response at first publication leaves the initial estimate fairly robust against revisions of magnitudes in excess of 0.1 percentage points when considering annual growth rates.

As for coherence with annual statistics, a few (AT, PT) derive annual statistics from short-term statistics. DK uses the same data collection system and concepts. ES reaches coherence because of concepts and definitions being coherent. DE does not calculate an annual index. FI makes many comparisons. UK does not benchmark. SE has annual statistics based on individuals and short-term statistics based on enterprises.

#### **Some concluding notes for LCI**

This indicator is still under development and for several countries more a delivery to Eurostat than part of the national statistical system. Some countries use administrative data as a part of the underlying sources. The eight countries, which have provided clear figures for sample sizes for enterprises (local units etc.) send together out somewhat more than 100 000 questionnaires. Response rates vary from 65% to 98%. Accuracy measures are under development.

#### **4. CONTINUOUS LABOUR FORCE SURVEY, LFS**

The Labour Force Survey (LFS) is specific in that it is continuous, at least in several countries. Most countries use week as the reference period, and build monthly or quarterly statistics from that. FI has month as reference period and continuous reference weeks since January 2000. UK has LFS-quarters separated into 13 weeks and divided into three notational months on a 4 weeks-4 weeks-5 weeks basis. – LU has not yet established an LFS. AT and DE are planning one. Until 2004 DE will provide quarterly estimates for the main items. FR is transferring from an annual to a continuous LFS beginning in July 2001. IT uses the first week without holidays of each quarter.

DK and IT publish quarterly, final statistics only, GR also quarterly. IE has four releases per year; not designated as provisional, but subject to revisions when definitive population figures become available from the 5-yearly Census. AT will have quarterly publications. FR has monthly and plans to have some quarterly complementary releases. UK releases LFS-data monthly together with other labour market data. The LFS data are seasonally adjusted and considered final. Even if results are presented monthly, they cover a period of one quarter. SE has twelve monthly press releases and reports, and four quarterly and an annual report. FI has a

set of 42 releases during 2001, including Press Releases and Bulletins. There are also time-series and databases, which are updated monthly. IE makes four releases per year for seasonal quarters: December-February, March-May, June-August, and September-November. FI has more disaggregated statistics in the Annual Bulletin than in the Quarterly and Monthly Bulletin. NL now publishes only yearly statistics, but next year quarters will be added.

The survey is voluntary in 6 countries (DK, FI, IE, NL, SE, UK) and mandatory in 5 countries (ES, FR, GR, IT, PT). If AT uses its current procedure, then a core part will be mandatory, and the majority of the questions will be voluntary.

Data are collected through personal interviews. Several countries (FI, IE, PT, SE, UK) mention CATI/CAPI, i.e. computer assisted telephone/personal interviewing. GR and IT have face-to-face interviews. NL has face-to-face interviews in the first wave and telephone in the second-fifth waves, FR has face-to-face interviews both first and last, also using administrative data. In DK approximately 85% of the data are collected by telephone; a mail questionnaire is sent when a telephone contact has not succeeded. FI uses CATI for 99% and face-to-face for 1% of the households. Administrative registers are used for some variables, such as gender and year of birth.

The number of calendar days from the end of the reference period to the national release is shown below. NL now has 6 weeks after the year. UK publishes on the 2<sup>nd</sup> or 3<sup>rd</sup> Wednesday of the month but one from the reference period. ES publishes usually on the Monday of the 7<sup>th</sup> week after the last reference week. There are differences between countries, e.g. in reference period and publication frequency. This is not included in the table.

AT	BE	DE	DK	ES	FI	FR	GR	IE	IT	LU	NL	PT	SE	UK
-	76?	-	85	~ 43	~ 21	30	180	90	85	-	(42)	50	~ 17	~ 50

As for the main criteria for the publication time, several replies point at fieldwork. DK adds the extensive manual coding and editing procedure. ES states the balance between as soon as possible and reduction of non-response, in particular “not-at-home”. NL states plausibility analyses, IE the time for data handling, IT production time (more precisely the time needed to collect all the questionnaires from the local municipalities), and PT the production delay. UK, which makes an integrated publication, needs availability of all key labour market data. FR is constrained by the availability of the registered unemployment data.

As for shortening the production time, DK expects to shorten the time – the current 85 days partly being due to an ongoing major revision of the production. IE has plans – reducing to 60 days in 2002 – and notes that further improvements will depend on better use of IT-systems, including transfer of data to headquarters. GR notes that a main questionnaire and three shorter ones with core variables would be useful, also portable computers. IT states the mode of data collection and a field staff under the direct control of the Institute. IT has a delay of 85 days now; this may be shortened to 40 days with CAPI/CATI. GR hopes to reduce from 6 to 3 months. NL states that the plausibility analysis should be more automatic. UK needs

all key labour market statistics. FI, FR, and SE note that they already have short production times.

As for early releases, there are no such plans. NL notes, though, that provisional estimates could be made during the data collection period. As for working conditions and timeliness, GR notes a need of more staff qualified in computers and more user-friendly computer software, also more communication facilities to improve the data collection stage.

### **Accuracy and Coherence**

The sample size varies for the ten responding countries roughly from 15 to 75 thousand per quarter, with a sum over 400 000. Most figures are in terms of households (for example GR has 30-32 000 households and 80-82 000 individuals). The response rate varies from 55% in NL to 95% in IT.

As for estimation models, SE and UK mention non-response; SE has compensation groups and in UK earlier responses may be rolled forward. UK states also proxy response. Some countries (DK, ES, FI, IE, NL) state here post-stratification, calibration, or other related estimation methods. FR is more model-dependent, especially for monthly statistics, where the register source dominates, whereas the survey will play a larger role quarterly.

As for accuracy measures and indicators, all countries with a running survey state a measure of the sampling error, such as sampling variance or standard error. ES has indicators of non-sampling errors. Some provide also numerical values for the accuracy. Standard errors are in many cases less than 1% at least for employment. Unemployment has a considerably higher relative standard error than employment in all four numerical cases provided. IT notes good accuracy for regional statistics on NUTS-2 level, but wide sampling variance for some estimates on NUTS-3 level, e.g. young unemployed.

When there are annual statistics, they are averages of infra-annual statistics, so there is coherence with annual statistics.

### **Some concluding notes for LFS**

The LFS is specific in being continuous. It is directed to households/individuals. It is still under development in several countries. The production time depends much on fieldwork, also technical resources. The sample size (mostly households) for the ten responding countries has a sum over 400 000 per quarter. The response rate varies from 55% to 95%.

## **5. EMPLOYMENT, DOMESTIC CONCEPT**

This indicator is different and a bit difficult from a conceptual point of view. It seems as if some countries have made the interpretation non-harmonised concept, and others domestic territory as defined in NA. SE and UK have noted that there is no special national concept. UK states that the LFS is the headline measure, and LFS is used for SE, too. For DE the data are part of the NA system, though available also monthly. For FI it is LFS, used in QNA and matched with levels in

annual NA. IE notes that the continuous Quarterly National Household Survey is used (see LFS above). GR has stated that the replies are the same as for LFS. ES has returned one questionnaire for the three indicators LFS, Employment: domestic concept, and Industry – number of persons employed. AT has now a micro-census but plans a change to LFS in 2003.

The indicator refers to a month and is published monthly in DE and SE; otherwise it is quarterly (note, though, that LFS builds from weeks and that AT asks about a month or a week depending on variable). DE has preliminary monthly statistics for the overall economy and quarterly statistics by industry. FR has provisional statistics for four main aggregates, a first revision with more detail, and then further revisions twice a year over a two-year-period. The survey is voluntary in FI, SE, and UK (LFS), and it is mandatory in ES (also LFS) and in FR (enterprise survey of the ministry of Labour and an administrative register). DK uses administrative data. DE uses material from monthly statistics and administrative data from social insurances. NL uses registers from the LFS and gross wages recorded in social security files, also an annual survey on employment and earnings. ES uses personal interviews in the LFS, and SE and UK use CATI/CAPI in the LFS.

The release time in calendar days after the month/quarter (month for DE, SE) is shown in the table below. It varies from 17 days in SE to 180 in GR. Part of the variation is due to source; for some it is LFS, for others QNA etc. DK has 50 days; collection needs 30 days after the quarter and processing 20 days. FR needs 4-5 weeks for the first data collection, about 9 weeks to collect data for the revised statistics, and in both cases about 1 week for calculations. Overall, it is important to note that there are several comparability deficiencies in the table.

AT	BE	DE	DK	ES	FI	FR	GR	IE	IT	LU	NL	PT	SE	UK
90	?	55	50	~ 43	80	~ 40	180	(90)	?	?	89	?	17	~ 50

As for the main criteria for the publication time, there are a few different types. For quarterly data DE states coordination with national product release data (55 days), and DK the process of data collection. FR needs two external sources and negotiates with those two. For ES it is a balance between as soon as possible and reduction of the non-response. SE says as soon as possible with restrictions due to calendar fluctuations in fieldwork conditions. UK states availability of all key labour market data, and NL international guidelines.

When it comes to shortening the production time, DE says that the time required for the quarterly calculation of the number of persons engaged for the overall economy to 35 to 40 days may become possible in the future. A further investigation is needed and estimation models would have to be developed. For DK a reduction in time is not possible with regard to the data collection system. For NL it depends on delivery of information from internal sources and for FR on external sources. For ES and GR, the comments are as for LFS; about data collection. SE is already within stipulated time, and UK points at the need for all key labour market statistics at the same time.

As for an early release, there is no plan. DE states that as soon as is possible in terms of work capacity, endeavours will be made to reduce the time between the reference month and the monthly press release by one month for monthly data.

In the overall comments, DE notes that further reducing the production time requires additional work capacities. DE states that the highest priority is given to the Action Plan indicators. Therefore, the production time for employment data as part of NA was reduced from 70 to 60 days last year. The same importance is attached to the data on hours worked.

### **Accuracy and Coherence**

No special description is given here on sample sizes and response rates. Where the LFS is used, figures can be found in Section 4. Otherwise, administrative data is the dominant source. Those countries (notably DE and DK) have not provided sample sizes and not commented on missing data. FR has figures for the external survey: unweighted less than 30% for the provisional and about 40% for the revised employment data; the average weighted response rate is 60 to 75 percent of the units and 75 to 80 percent of the employment.

As for estimation models, NL, SE and UK (LFS) mention non-response, and so does ES: imputation for partial non-response and weighting factors based on population projections. In DE, experienced staff members perform necessary estimations. AT uses independent demographic estimates broken down in several respects. FI (LFS) states post-stratification and calibration techniques. FR uses annual estimates and a calibration model chosen from a set of ten econometric models to correct for bias with regard to newly created establishments and employment in establishments with fewer than 10 employees.

As for accuracy measures and indicators, there are those of the LFS. In addition, NL uses revisions. The differences between the first estimate and the first adjustment to NA-data on average are less than 0.5%. AT has no revisions and no special measures but uses benchmarking with other sources on employment.

NL states coherence with annual statistics, and FR describes a two-stage operation including also the population census. AT, DE, ES, and SE compute annual statistics from infra-annual statistics. DK has no direct coherence. GR does not have annual statistics, and UK does not have annual statistics on a comparable basis.

### **Some concluding notes for Employment, Domestic concept**

The concept is a bit different and difficult in that not all countries have one; a few refer to the LFS and several to the NA. (In addition, the non-response was considerable for this indicator.) Administrative data are used in several countries. A few have a specific survey, but most have either the LFS (or a similar survey) or employment within the QNA. The statistics are monthly in DE and SE, otherwise quarterly.

## 6. INDUSTRY, PRODUCTION

The Industry Production indicator has month as the reference period in all countries. This indicator is published monthly in all countries, except for DK and SE, which have 11 releases. SE states that the statistics cannot be considered as preliminary, but that they may be updated. This is the case for more countries, while some others have more pronounced different releases. FI has press release and publication proper, and IT has provisional and final statistics. AT has provisional, revised, and final. IE has early global, provisional, and final. FR, too, has 3 types: first provisional, which then can be revised for around 1½ years; after publication of annual data figures are final. Similarly, GR has three types: provisional, provisional revised, and final for all months of last year on the third month of next year. NL makes four to five releases with updates due to more complete response and three releases due alignment to NA-figures. DK revises when publishing the next two months.

Four countries use a more aggregate level in the first publication: FI (only main industries), NL (more aggregate levels), IE (an overall aggregate), and PT (2-digit first).

The survey is mandatory in all countries, except for Ireland. The source that dominates is a surveyed statistical unit such as enterprise, kind-of-activity unit, or local unit. In some countries (FI, UK, SE, IT), a Trade/Industry Association reports for some industries. NL has turnover (and output prices) as the primary source but uses also other variables and figures collected by boards of producers. FR has several sources, too (administrative, in different ways).

Mail questionnaire dominates the data collection. Fax and e-mail are also mentioned for return, and telephone for delayed responses. For example, FI has 75% by mail, 20% electronically, and 5% by telephone. UK mentions electronic mail. AT introduced an electronic questionnaire with the month April 2001. IT uses questionnaires received mainly by fax but will during 2001 build a system of automatic data capture based on electronic forms received by Internet and a fax server with character recognition capabilities.

The time in calendar days after the month to the first release is shown in the table below. It should be noted that FI has 28 days for an advance press release, before the preliminary estimate after 44 days (in the table). UK has 26 working days, which means approximately 37 calendar days. AT has 90 days for the revision, and next September for the final statistics. IE has, in addition to the early global release after 42 days, 55 and 86 days for the provisional and final statistics. IT has longer production times for the two months July and September (published in September and January) due to holidays.

AT	BE	DE	DK	ES	FI	FR	GR	IE	IT	LU	NL	PT	SE	UK
60	40?	38	~ 37	40	44	48	45-60	55	~ 45	65	42	~ 40	55-60	~ 37

As for the main criteria for the publication time, there are different answers. Response rate is mentioned by many, either as the main one (GR, IE, SE) or as one out of several criteria (ES, FR, PT, UK). NL states just international guidelines, and three countries (FR, ES, IT) have the STS Regulation as one criterion. AT has the

STS Regulation for the advance estimate and data collection for the revised indicator. DE makes an agreement with the Länder. FI has time for data collection as the main criterion. DK splits the time used into supplier time (10+17 days) and internal production time (10 days). UK points at the response burden and the official policy to minimise the burden; companies are allowed 19 days. UK makes the estimate that the response would drop by 23% if the publication target were brought forward five days. This would in turn have a significant effect on future revisions. IT has longer production times for two reference months July and September due to holidays. LU does not have a release calendar.

As for shortening the production time, some different comments are made. FI will reduce the return day from 20 to 15 days after the month. LU aims to reduce the production time, not to 30 days, but to 55 to 60 days. SE has a goal of 48 days at the end of 2001; through co-operation with some large companies and improvement of the production process. DK would reduce the time at the respondents in co-operation with them. UK observes that 30 calendar days implies a loss of approximately 7 working days for the UK; this would have a significant effect on the quality of the First Release. IE states that the response rate would be very poor. GR also points at the delay of responses. PT and ES make related comments, including response quality and revisions. DE states that the production time cannot be considerably reduced. AT makes that statement, too, adding that no primary data are available at (t+30). NL would introduce a model-based procedure, discussed elsewhere (*ref. to* "Process redesign of short-term indicators and the role of Eurostat and NSI's").

When it comes to an early release, most countries do not plan one. UK says that such a task would be time consuming and have little or no benefit. FI, FR, LU, NL, and SE make comments in the other direction, although some comments are more like reduction of the present time than a different early release. FR will pass under first 45 days and then try 40 days next year. LU uses a forecast procedure at the moment but plans a more reliable early release. FI will expand the first release to the publication level. NL aims to publish aggregate estimates sooner but does not specify the plans. AT plans to carry out a feasibility study about econometric forecasts, for the possibility to deliver some aggregates of the production index (industry, MIG's) at an earlier date.

### **Accuracy and coherence**

Except for LU with 185 kind-of-activity units, the sample size varies from 1 300 units (FI) to 17 000 units (DE); the type of unit varies (local unit, establishment, enterprise etc.). Some (AT, DE, DK, GR, NL) have stated a cut-off threshold, 10 or 20 employees. DK covers about 85% in terms of turnover. The sum of the sample sizes, i.e. the number of questionnaires sent out, is about 65 000 with NL uncounted. NL has three different groups: turnover, stocks, and also hours worked, product statistics, and consumption statistics (it is not quite clear how these are combined). Industrial turnover and output prices are considered the main sources for NL.

The response rates vary (except for IE the survey is mandatory.). AT has 50-60% first, then 96% and finally 99.9%. Similarly PT has for its three releases 85-90, 90-95, and 95-99%. IE has 75-80% and 85-90%, respectively, for the two later rounds. NL has around 70% and 80% in the two cases provided. FI has as high a first rate

as 97%, then 99%. Otherwise UK has 81%, SE 90%, DE 92%, ES over 95%, and DK 97%. In most cases the rate is provided in terms of value; UK in terms of forms received and GR in terms of enterprise. GR receives a bit more before publishing the second time but not more than 1-2%. SE has the rates 80% unweighted and 90% weighted.

As for estimation models, three countries (FI, IE, NL) state that none are used. Six countries (AT, DE, DK, ES, IT, LU, PT) point at models for non-response. DK has a cut-off survey but does not explain the model used. GR has a model for the production volume for key enterprises. FR uses Seasonal ARIMA. SE notes that deliveries are used for most industries (corresponding to 73% in value), whereas production data is 22% of the estimated value and hours worked 5%. UK uses X-11-ARIMA every third month to forecast data for preliminary GDP estimates, having then the two first months of the quarter. – It seems likely that several countries use approximations for production (for example just turnover), but the comments in this respect are few.

As for accuracy measures and indicators, there are just a few. SE uses non-response rate every month and sampling variance once a year. The 95% confidence interval is  $\pm 1 - 2\%$  on the overall level. For FI, the difference between the sample-based infra-annual and the annual index has been under 1 percent unit. The difference between advance and preliminary estimates in FI has been under 0.6 percent units. For NL the difference between first estimate and NA-adjusted data is less than 0.4 percentage points on average. IT uses external sources. The five countries FR, IE, NL, PT, and UK study revisions. In UK, since April 1998, the revision targets have been met, that is no more than three revisions of greater than plus or minus 0.3% to the three-month on three-month growth rate in any year. GR notes that the revision is not great and that non-sampling errors are examined. DE emphasises plausibility checks being made. LU does not use accuracy measures in addition to coherence with other industrial indicators. DK has no regular measure, nor does ES seem to have such a measure. AT notes first that provisional data have been introduced only recently, and then that the revised statistics (after 90 days) are monitored but at the moment without regular measures/indicators.

When it comes to coherence, NL states an adjustment to NA. FI has an annual index based on more establishments, and the statistics are coherent. DE calculates the annual index from the twelve monthly indices. AT also calculates the annual indicator on basis of the monthly ones. In addition absolute short-term figures are compared with information from the Structural Business Statistics. Some countries (DK, ES, IE, LU, PT, UK) make comparisons, but more on a micro level or with other sets of statistics. IT (conversely) uses the monthly survey when there is non-response in the annual Prodcom survey. – There have been discussions in several Task Forces about coherence deficiencies, concerning both statistical unit types and statistics overall.

### **Some concluding notes for Industry Production**

All countries have a monthly indicator, and they have either preliminary releases or regular releases with updates. Most countries use mail questionnaires; just a few have electronic data collection. There are plans and ideas for a shorter production time, e.g. reduce the return day for respondents, improve contacts and compliance, and use a model-based procedure, but also comments against, e.g. that such a

shortening would reduce quality significantly. Around 65 000 questionnaires are sent out (excluding NL and BE). Quite a number have a response rate over 90% for the first estimate, while a few have 70% or even 50-60%. Only few accuracy measures and indicators are used. Some countries study revisions or even have targets for the sizes of the revision. Most countries make comparisons with other statistics. NL adjusts to NA, and UK has a strong tie to QNA, including a forecast when the third month is not available.

## 7. INDUSTRY, NUMBER OF PERSONS EMPLOYED

FI notes that the number of persons employed that is transmitted to Eurostat is based on the LFS. ES has this indicator equal to the LFS and employment: domestic concept. IT has now a survey for firms with more than 500 employees; this is going to be changed soon, but the present system is used in this description.

This indicator is monthly for 8 countries (AT, DE, FI, GR, IT, LU, PT, UK) and quarterly for 5 countries (DK, ES, IE, NL, SE). The indicator is published monthly and quarterly, respectively. DK and IE have both preliminary and final statistics. AT has provisional, revised, and final statistics. NL has 2 preliminary and a final yearly release, due to alignment to NA-figures. IE has the preliminary statistics more aggregated. UK has additionally regional quarterly releases

The survey is voluntary in FI and IE. DK uses administrative data. Otherwise the survey is mandatory. Mail questionnaire dominates the data collection. Fax, touchtone data entry, and e-mail are also mentioned for return, and telephone for delayed responses. ES and FI use personal interviews (LFS-data). DK uses administrative data, and NL has a mixture from LFS and Gross wages in social security files. AT has introduced an electronic questionnaire, starting from April 2001.

The reference period actually used in data collection deviates in some cases, as follows, from the full month/quarter. AT uses the number at the end of the reporting month, DE the last day of the month, LU the end of the month, and IT the first day of the month and the last day of the month. IE has a particular week in the third month of the quarter (for March, September and December the week ending on the 2<sup>nd</sup> Sunday, and for June the week ending on the 3<sup>rd</sup> Sunday is used). For SE it is a day within the month: the Wednesday closest to the middle of the month (which is viewed as the most “normal” day). UK has a day within the month defined as the Friday following the second Thursday of the month. For those with LFS, there are continuous weeks (ES and FI). – DK states a whole quarter, and GR and PT state the whole month.

The table below shows the number of calendar days after the month/quarter to the first release. IE has approximately 140 days for the final statistics. The third row indicates the period (month or Quarter) and use of LFS (indicator 4, ES and FI).

AT	BE	DE	DK	ES	FI	FR	GR	IE	IT	LU	NL	PT	SE	UK
60	67?	50	50	43	21	48?	700	110	80	65	100	45	50	40-45
M		M	Q	Q,4	M,4		M	Q	M	M	Q	M	Q	M

As for the main criteria for the publication time, data collection and EU

requirements (or international guidelines) are two frequent replies – one, the other, or both. PT adds that data are not disseminated if the response rate is lower than 70%. SE emphasises a high response rate and the fact that many enterprises need pay rolls, which normally are lagged by one month, as a basis. UK notes the importance of the availability of employer survey data. GR and LU do not have a publication time in advance.

As for shortening the production time, the responses are very similar to those provided earlier (in Sections 4-5), since there is a high overlap in methodology and even survey. IE states here: “Timely response from respondents !“. SE says first: “Of course, we would like our respondents to make our survey more of a priority.”

No country plans a change of the period used in data collected. When it comes to an early release, there is no plan, except possibly for SE. This alternative has been considered, and SE would like to measure the deviation between an advance estimate 2 weeks earlier and the final estimate. IE will make attempts for 70 days. NL has no other plans than the Action Plan. AT and FI both note that they are already early.

A few overall comments are made. UK notes that employment data are collected in the same inquiry as turnover data. This holds down compliance and processing costs but probably adds to production time. The collection of employment and turnover on the same form affords opportunities for internal consistency checking of the data and hence improves quality of the estimates. GR notes a need for personal computers and LU for technical support. SE has tested new reminder postcards with a promising result for the future. In addition, SE notes that human factors are crucial.

### **Accuracy and Coherence**

There is a wide variation in sample size from 185 kind-of-activity units in LU to 49 000 local units in DE. The numbers for the LFS have a wider coverage.

The response rates vary depending on data collection mode and release time and number. DE has 95% (weighted with number of persons; enterprises with at least 10 employees) and AT goes from 50-60% in the first round to finally 99.9% (unweighted). GR was somewhat below 50% just after the revision.

The comments for estimation models are largely about non-response (AT, DE, ES, IE, LU, NL, PT); the wording differs, e.g. imputation, value of the preceding month, and grossing up. UK uses ratio estimation and annual benchmarking, and FI uses post-stratification and calibration techniques. DK, GR, IT, and SE state no model.

As for accuracy measures and indicators, there are just a few. ES publishes the sampling error of the main figures quarterly, also some indicators of non-sampling errors. FI reports the relative standard errors regularly, and SE presents confidence intervals. UK has sampling errors of level (of changes are under development); also revisions targets. LU has no other accuracy measure, since the survey represents 95% of the value added. IE notes no variances due to census and very minor updates. NL and PT use revisions. AT and DK use no measures.

A few countries provide numerical values for the accuracy. There are standard errors from the LFS, as described in Section 4; ES had for the last quarter in 2000 the sampling error 1% for employed in industry. For SE, the accuracy indicators show that the relative margins for error are normally not more than 10% for each level. Regarding the accuracy indicators for the relative differences, it is more difficult to obtain significant results on the 2-digit NACE level. As for revisions, PT has indicator revisions lower than  $\pm 1\%$  (usually around  $\pm 0.5\%$ ) between the first and second dissemination. For NL, the differences between the first estimate and the first adjustment to NA-data on average are less than 0.5%. UK notes that revisions targets usually are met, apart from at the annual benchmark point

As for coherence with annual statistics, there are some different types of replies. IT and NL state simply 'yes'. UK benchmarks to the Annual Business Inquiry. IE used to force the results to agree with annual Census of Industrial Production (CIP) employment estimates. This practice has been discontinued from last year in order to focus the series more closely on earnings. However, comparisons are still done with CIP and reasons for differences explored satisfactorily. AT makes comparisons with the Structural Business Statistics; ES and LU e.g. with social security figures. PT makes comparisons with SBS survey at the level of Enterprise (usually those data are comparable, if not corrections are made).

Annual indicators are calculated from monthly indicators in AT and DE, similarly in ES and FI (there from LFS). DK has no direct coherence. It is still too early for GR. SE has only just begun comparative studies with other sources (LFS and annual registers).

### **Some concluding notes for Industry Employment**

This indicator is monthly for 8 countries (AT, DE, FI, GR, IT, LU, PT, UK) and quarterly for 5 countries (DK, ES, IE, NL, SE). The reference period actually used in data collection is different from the reference period for all but three countries; the end of the reporting month, the first and last day of the month, a particular week in the third month of quarter, and a day within the month. The sample size varies; to some extent the sample is the same as for other indicators.

## **8. INDUSTRY, OUTPUT PRICES, DOMESTIC MARKET; PPI**

The PPI – Industry Output Prices here restricted to the domestic market – has month as the reference period in all countries and PPI is published monthly. PT now has its SDDS-information to IMF first, but soon the Press release and the Quick Information Sheet will be produced at the same time. DE has a press release with final results and at the same time statistics broken down to about 800 product groups. IT has one release with provisional indices and one with definitive indices. NL makes six revisions due to more complete response, and final data are published six months after the reference period. ES makes releases of provisional data (but does not state if and when there are final statistics). LU considers the last three or four months as provisional. – IE has a wholesale price index. AT is for the time being not producing an output price index based on real price information. Preparatory work is planned to start in year 2001. In the meanwhile Statistics Austria estimates an industrial output price index based on unit values completed by real price information from WPI where applicable (so-called 'hybrid price index').

The survey is mandatory in all countries. Most countries (DE, DK, ES, FI, FR, IT, LU, NL) have a mail survey. DK uses telephone for delayed responses. FI uses increasingly also e-mail. IE uses mail, telephone, and electronic mail. GR uses telephone and face-to-face interviews. Some (PT, SE, UK) use a combination of mail and touchtone data entry; PT also fax. NL has not a standard questionnaire but a tailor-made system depending on the prices to be collected.

The reference period actually used in data collection deviates in some cases – 8 countries as follows – from the full month. Six countries (ES, DK, FI, GR, IE, PT) use the 15<sup>th</sup> day of the month, or nearly so (as an example, FI states a close working day), but with some exceptions for some products. In DE it is mostly the 21<sup>st</sup> of the month. UK uses a transaction during the month. Dates before the end of the month makes the production time appear shorter from the user’s point of view. The time for the first release varies from about 11 days in the UK to 45 days in ES, GR, and LU. It depends for several countries on weekdays; e.g. UK publishes on the second Monday and FI on the working day closest to the 18<sup>th</sup>. The table shows the number of calendar days after the month to the release. Moreover, the last row shows measurement periods other than the full month. DK has just changed from the 25<sup>th</sup> of the month to the 15<sup>th</sup> but has not yet changed the releases.

AT	BE	DE	DK	ES	FI	FR	GR	IE	IT	LU	NL	PT	SE	UK
–	40?	34	~ 37	45	~ 18	30	45	~ 24	30	45	30	27	25	8-14
		21	(25)	15	~ 15		~ 15	~ 15				15		trns.

The main criteria when determining the publication time is a combination of international guidelines and time needed for data collection-validation-compilation. PT points at the response rate (at least 80%), and ES points at quality and reduction of non-response. LU has plans to shorten the production time to 30 days. If the production time were to be shortened, FI would start the data collection earlier; FR says that the time could probably be enhanced with collection through Internet, and GR that the long collection time should be shortened. On the other hand, ES, IE, IT, and SE point on difficulties for respondents, availability of data, response rates etc. NL states prices of seasonable goods (day prices) as a difficulty to overcome if shortening the production time.

As for an early release, NL alone plans to publish aggregate estimates sooner. LU currently transmits advance estimates to Eurostat using a forecast procedure.

### Accuracy and Coherence

There are three aspects for the sample size: the number of units (for example enterprise or kind-of-activity unit) for data collection, the number of products sampled, and the number of price quotations. Each country has provided one or more numbers. GR has around 950 purposively selected large-scale enterprises – covering about 70% of the turnover for each 4-digit code in NACE Rev.1 – with 2 500 price observations. LU has 1 450 products from 117 kind-of-activity units representing 90% of the turnover in industrial branches. The smallest number of prices is 700 in FI. The largest is in NL, where there are 27 000 prices from 3 400 commodities in 4 800 units.

The response rate varies. Low values are IT and NL, which have 70% in the provisional/first round, and 85% and 80%, respectively, in the definitive/second round. High values are DK with 99.5% and GR with 97-99%. The survey is mandatory in all countries, except for IE, where the survey is now voluntary.

Few countries use accuracy measures, especially in publication, but some countries investigate or monitor a measure. GR investigates non-sampling errors. IE monitors the coverage and updates the sample with such a target. UK works on the sampling variance. FI has no measure but will at the base year revision. FR, NL, and PT use revisions. UK has a target: revisions to the percentage annual growth rate between the first published estimate and the estimate two months later should be less than 0.125 (regardless of sign) in 9 out of 12 months. The revisions target has been achieved in most recent years, but in 2000 the target was breached mainly because of the volatility of oil prices causing revisions to petroleum products data. FR states that the difference between the first publication and the final figures hardly ever exceed 0.1 point on the aggregate month-over-month PPI. For NL, at the aggregate level, the differences between the first estimate and the final data on average are less than 0.5 percentage point.

There are estimation models for non-response, in cut-off methods (at least NL) for the survey, and hedonic models for computers (at least FR). SE states imputation from adjacent categories for some “tailor-made type” products.

There are in general no separate annual statistics. Instead, several countries note that annual statistics are derived from the infra-annual statistics.

### **Some concluding notes for PPI**

The PPI – Industry Output Prices here restricted to the domestic market – has month as reference period in all countries and is published monthly. The reference period used in data collected varies. The six countries ES, DK, FI, GR, IE, PT use the 15<sup>th</sup> of the month, DE uses the 21<sup>st</sup>, the five countries FR, IT, LU, NL, SE use the whole month, and UK uses transactions during the month. Most countries have a mail survey, FI uses also e-mail, and other countries use a combination of mail, fax, and possibly also touchtone data entry. Three characteristics of the surveys vary a lot between the countries: the number of enterprises (or other statistical unit), the number of products surveyed, and the number of price quotations. The response rate the first time varies between 70% and 99%. No country publishes accuracy measures at the moment, but some countries already calculate or work on some measure. UK has a target for the size of revision, and IE for coverage.

## **9. CONSTRUCTION, PRODUCTION**

AT, DE, and LU have monthly statistics. DK, ES, FI, IT, NL, and UK have quarterly statistics. FR, GR, IE, PT, and SE do not yet have separate statistics (according to the regulation). DK and NL have basically monthly data. DK will from this year base releases of the construction production index on information from the QNA. UK publishes two releases for GDP each quarter, which include estimates of Construction output. ES has advance and definitive publications. FI has a preliminary release and subsequent releases with two revisions, at most. DE makes monthly releases with preliminary results. LU releases definitive figures on a

monthly basis. NL makes two releases – the flash and the regular QNA – and three revisions due to alignment with NA-figures. NL delivers quarterly to Eurostat. IT has releases each quarter and a benchmark after 5 years. No country has different levels of detail.

The survey is mandatory (in NL contributions of local reporting units are voluntary according to Dutch laws, but mandatory according STS-legislations). DE collects data from local units, LU from kind-of-activity units, and UK from enterprises. IT has questionnaires based on administrative data of building permits. DK uses mainly an administrative register on buildings. ES has an administrative register of construction enterprises as source for a survey. FI has both a direct mail survey and a VAT register. NL uses sales in the construction industry, progress of works, output prices, and productive hours.

The table shows the number of calendar days after the month/quarter to the release and the frequency (Month or Quarter). The basic data are monthly in DK and NL. AT, ES and UK have 90 days for revised/definitive statistics.

AT	BE	DE	DK	ES	FI	FR	GR	IE	IT	LU	NL	PT	SE	UK
60	40?	40	85	60	85	–	–	–	180	65	47	–	–	49-56
M		M	Q	Q	Q				Q	M	Q			Q

As for the main criteria for the publication time, DK and FI state their respective administrative registers. AT says availability of data and IT to achieve an acceptable coverage. NL says international guidelines. UK has a chain with quarterly GDP estimates, which in their turn depend on key datasets. LU has not a determined publication time but releases results as fast as they are available.

As for shortening the production time, some different remarks are made. UK has an earlier estimate for preliminary GDP, but it is not considered to be of sufficient quality to be separate. NL notes that this quarterly estimate would then be separated from the QNA. For FI a model-based estimate for the third month would be needed. DK finds the data collection such that a reduction is not possible. LU points at difficulties with forms to be returned. AT and DE state that the production time cannot be considerably reduced, and ES that it is impossible. For IT, it would imply to go from administrative sources to a direct survey to enterprises; that would in turn impose a burden on the enterprises.

No country plans a change of the period used in data collected. As for an early release, FI plans one after about 55 days.

### Accuracy and Coherence

The sample size varies, partly due to different methods. FI uses the 200 biggest enterprises for the direct mail survey and all 27 000 as administrative source. NL covers for sales all enterprises with more than 100 employees; a sample of 1 200 enterprises is taken in the size band 10-100 employees. Smaller enterprises are not included. AT samples about 5 000 out of 5 800 establishments with at least 10 employees, DE has 12 000 local units out of a population of 81 000 with at least 20 employees, LU 185 kind-of-activity units most with more than 20 employees, and UK 12 000 firms out of a population of 160 000.

The response rates vary, too. FI has the first time 70% unweighted and over 90% weighted. The third time it is 99% and almost 100%, respectively. The figures for NL, which are weighted by turnover, are 60% the first time and then 80%. IT has 65 and 90%, respectively. ES has 72%. DE has first 75% (in value) and then nearly all. AT has first 50-60% of to reports, then 96%, and finally 99.9%.

As for estimation models, DE, ES, and LU mention non-response; data from the previous month and/or year are used, in some cases taken forward. For UK, the first published estimate is mainly model based using an ARIMA model, which extrapolates the trend line. Adjustments may be made based on known large projects, weather factors, two months of data from New orders, and early responses.

As for accuracy measures and indicators, there are not many. NL and UK use revisions. NL states that at the aggregate level, the differences between the first estimate and the first adjustment to NA-data on average are less than 1 percentage point. For UK the revision to the first published estimate is usually less than 0.2 percentage points compared with a year later (see also coherence). AT states that revisions (at t+90) are monitored, but that there are at the moment no accuracy measures or indicators, which are used regularly to assess the size of revisions. FI says none at the moment but that revisions will be measured in the future. – The reference period actually used in data collection is the whole period.

As for coherence with annual statistics, FI has none; AT and DE builds the annual index from the monthly ones. IT and DK say 'Yes'. LU makes comparisons with other, more qualitative indicators. NL adjusts to value added according to NA. UK benchmarks onto annual statistics: over the last five years the indexed levels have been no greater than 0.4 different.

### **Some concluding notes for Construction Production**

Here, three countries report monthly statistics (AT, DE, LU), six countries quarterly statistics (DK, ES, FI, IT, NL, UK), and five countries do not yet have separate statistics according to the regulation (FR, GR, IE, PT, SE). Several countries (DK, NL, UK) have the statistics tied to the NA, and several have more than one release. A few use administrative registers. The publication time depends on the source, and a reduction would for several countries imply other methods and/or lower accuracy. For the six countries with clear figures on sample sizes, there are about 17 000 monthly and 15 000 quarterly questionnaires. The first response rate is fairly low, 50-70% for many countries. Especially NL and UK study revisions, and they have adjustments/benchmarking to annual NA/statistics.

## **10. RETAIL TRADE, TURNOVER**

The indicator Retail trade, turnover, has month as the reference period in all countries. The indicator is published monthly in all countries, except for DK, which publishes six times a year. Some countries (DK, ES, FI) have both preliminary and ordinary/final statistics. NL makes 4 to 5 revisions. IE has preliminary estimates and detailed final results after 8 months. LU publishes on the 15<sup>th</sup> with the last month estimated. Many countries (DE, DK, FI, IE, NL, UK) publish early statistics with less detail than the final statistics. DE, for example, publishes statistics first for 10

retail areas and then for 31 NACE headings. FI has preliminary and ordinary statistics with 3 and 30 classes, respectively.

The survey is mandatory in most countries; IE and FR are exceptions. Mail questionnaire dominates the data collection. Fax, touchtone data entry, and e-mail are mentioned as modes to return the information, and telephone for delayed responses. LU uses administrative data, and so does FI partly. FR is special in that data are different, not retail trade, but household consumption. It is a construction with three parts: (i) a business survey conducted by the French Central Bank about manufactured goods for household consumption, (ii) car registrations, and (iii) declarations to the French Social Security of monthly reimbursement of medicine.

The production time in calendar days is shown in the table below. It is the same for both the user and the producer with a slight exception for the UK where data for retail industries are collected on a rolling 4 weeks-4 weeks-5 weeks basis (and IE as an option). DK, which publishes every second month, has 36 days for preliminary and 58 days for final statistics alternating with a month longer. FI has about 55 days for preliminary and around 85 days for ordinary statistics. ES has 45 days in 2001 and plans 35 days in 2002. FR has 23-25 days – *note*: different data. IE has a lag of approximately 8 weeks, publishing on the last Friday of the month.

The table shows the number of calendar days after the month to the first release.

AT	BE	DE	DK	ES	FI	FR	GR	IE	IT	LU	NL	PT	SE	UK
65	60?	45	36/66	45	55	~25	75-80	~56	56	75	39	~ 65	45	~ 18

There are some different comments to the main criteria for the publication time. FI has the survey response for the preliminary statistics and the administrative source (lag about 65 days) for the final statistics. IE, IT, and NL emphasise sufficient response. So do PT (minimum 70% for publication) and SE (around 80%). AT notes the process of data collection: The legally defined remittance date corresponds to the preliminary announcements for the value added tax (15<sup>th</sup> of the second month of reporting month).

As for shortening the production time, NL and SE would concentrate on large enterprises. FI and IT would develop other data collection methods. SE notes that quality (accuracy) would be worse. DK would try to use data from registers. GR has the ambition to shorten the production time, but it is difficult to get data earlier from enterprises. Several countries (AT, DE, FR, LU, UK) reply to this question about shortening the production time that it is impossible or that it is impossible without impairing the quality. AT refers to necessary information for the reporting units.

No country plans to change the period used in data collection from the full calendar month. As for early release, most countries do not plan one. Exceptions are NL within a month, and SE in 25-30 days with a procedure based on large enterprises. FI will this year study possibilities to speed up releases.

ES has some specific problems due to a taxation system and also a certain industry. PT suggests an early EU index for MIG's and total without MS's.

## Accuracy and Coherence

The sample size varies considerably. Disregarding the 330 enterprises in FI (supported by administrative data, 23 000 units), the smallest number is 2 185 enterprises in GR and the largest is 25 600 in DE. This means, respectively, 4% and 8% of the population. NL has total enumeration above 20 employees and samples about 10% below. DK includes about 30% of the enterprises and 70% of the value. ES has quite different sizes for the years 2001 and 2002; 3 500 and 11 500 enterprises, respectively. The present sum in terms of questionnaires is about 75 000 (excludes BE and administrative data).

The response rate also varies. DE notes that considerable estimates have to be made for the current month but that after another four weeks almost all reports are available. FI starts on 55%, continues with 85% and ends up with 100%. IE has first 60% and then 70%. NL has first 60% and then 80%. UK has first 60%, then 75-80%. PT has first 80-85%, then 85-90%. DK has 98% already the first time, then 100%. ES has the only figure 50%, IT 65-70%, AT 94%, GR 90%, and SE 90-93%.

As for estimation models, some partly model-based procedures are used for estimation. NL uses a model when the response refers to four weeks instead of a month. UK uses matched pairs and FI has a panel; in both cases there is a treatment of outliers. UK has special non-response estimation procedures for significant retailers. DE, IT, and PT make estimates on the micro level for non-response using previous data. AT estimates missing data in the completely surveyed strata. SE has a combined ratio estimator.

As for accuracy measures and indicators, there are just a few. NL has, however, as much as three types: size of revisions, deviations between infra-annual and annual, and sampling variance. The differences between the first estimate and the definitive data are less than 1% on the aggregate level. SE uses confidence intervals: 0.5% for NACE 52. AT calculates standard error (without publishing). GR has not measures but studies non-response and other non-sampling errors. FI studies difference and revisions; deviation of yearly year-on-year change between STS/BR, which is 0.8 per cent units on average during years 1995-1999 and Revision of monthly year-on-year change between preliminary and first ordinary release is 0.8 percent units on average in 2000. IT has kind and size of revisions. PT and UK use revisions. PT finds the measures to be good in general. UK has a revision policy for three months on previous three months and 10 out of 12 months. UK notes that the revision policy is adhered to.

ES and SE state coherence with annual statistics without further explanation. NL uses the same sample for both monthly and annual statistics. PT finds the comparability good. UK has made an update of the structure of the survey – together with rebasing the index – every three to five years. FI states that it is not exactly coherent and that no benchmarking procedure is used. The IE series is not currently benchmarked. GR has no way to measure coherence. LU states a difference in coverage. DK has no annual statistics. DE calculates the annual index from the twelve monthly indices. AT compares change rates with information from the SBS. FR refers to GDP.

## Some concluding notes for Retail Trade Turnover

This indicator has month as reference period in all countries and it is published monthly (except in DK with six times a year). Many countries have several versions, preliminary and ordinary/final statistics, most with less detail first. The survey is mandatory with IE and FR as exceptions. Mail questionnaire dominates the data collection. Fax, touchtone data entry, and e-mail are mentioned as modes to return the information, and telephone for delayed responses. LU uses administrative data, and so does FI partly. FR is special in that data are different, not retail trade, but household consumption. Many emphasise sufficient response for the publication time. A few countries have plans for an early release or a shorter production time. The sum of the sample sizes (excluding BE) in terms of questionnaires is about 75 000. The response rate varies from figures as low as 50%, especially in the first round. Later figures are 70, 80, 90 or even 100%.

### 11. SERVICES, TURNOVER

Most countries have an indicator Services, turnover, but in many cases with a restricted coverage. GR and PT do not yet produce or publish this indicator. IE plans to introduce the index in June 2001. ES does not have results but has provided parts of the information required based on plans. DE has a limited coverage: wholesale trade, and hotel and restaurant. AT has statistics on turnover only for NACE-codes 50, 51; derogation for the codes 55, 60-64, 72, 74. FI notes that services do not cover trade (G), financial intermediation (J), holding companies (7415), public administration (L), education (M) and health and social work (M).

The reference period is month in AT, DE, FI, FR, and LU. It is quarter in DK, ES, IE, IT, NL, SE, UK. In UK, however, there is an experimental monthly index. ES has a wish to turn to month. The indicator is published monthly or quarterly, corresponding to the reference period. ES will have preliminary and definitive statistics. FR has two preliminaries and a definitive. So has NL. LU publishes mid March, June, October, and December (the last month is estimated). UK has its quarterly data published in four different releases: preliminary GDP, Output income & expenditure, Quarterly National Accounts, and then New Releases (detailed current price turnover).

Two countries have less detail first. DE makes first estimates for 6 wholesale areas and for 4 areas of the hotel and restaurant industry. There are revised results; on 40 and 8 NACE headings, respectively. UK has first total services only, then 4 broad industry groups and finally approximately 20 industry groups.

The survey is mandatory in most countries. DK, FR, and LU use administrative data. NL has administrative registers as additional source in some cases. Mail questionnaire dominates the data collection. Fax, touchtone data entry, e-mail, and electronic questionnaires are also mentioned for return, and telephone for delayed responses.

The production time in calendar days after the end of the period (month or quarter) is shown in the table below. All countries use the full reference period, so the production time is the same seen from both the producer's and the users' perspective. DE has 34 days for wholesale trade and 45 days for hotel and restaurant. FR will from now respect the regulation, i.e. 60 days. IE has not yet

production but expects four months. UK has three rounds with about 25, 52, and 84 days. The table shows the number of calendar days after the month/quarter and this frequency (Month or Quarter) to the first release.

AT	BE	DE	DK	ES	FI	FR	GR	IE	IT	LU	NL	PT	SE	UK
65	?	34,45	90	~75	85	60	–	(120)	90	75	85	–	45-50	25
M		M	Q	Q	M	M		Q	Q	M	Q		Q	Q

As the main criteria for the publication time, FI states the administrative source (about 65 days). DK and SE also refer to the administrative source. A few countries (FR, NL) mention regulations/obligations. A few others (IE, NL) point at response time or internal confirmation/correction work.

As for shortening the production time, there are just a few suggestions. NL would do sampling within the reference period, for example one week – but has no experience and lack of capacity. FI would have to develop a model on direct data collection from enterprises – the lag of the administrative source is the major obstacle. Similarly, SE would have to refrain from the administrative source – and base the statistics on data collected from big enterprises only; worse quality. DK also mentions the administrative data; there is a law implying a delivery about 40 days after the quarter. A few countries (DE, FR, LU) emphasise that it would be difficult and/or that the quality would be impaired. ES would like to shorten the production time, and IT would like to have more technical facilities and more staff training. AT notes the process of data collection: The legally defined remittance date corresponds to the preliminary announcements for the value added tax (15<sup>th</sup> of the second month of reporting month).

No country plans to change the reference period for the data collection from the full calendar month/quarter, except for NL, which are considering possibilities. As for an early release, there are a few plans. UK has plans to develop a monthly index. DK plans a monthly indicator (advance estimate) based on reports from big enterprises; that would mean a production time of about 60 days. NL will have to start working on that. FI will in 2001 study the possibilities to speed up the current releases.

### Accuracy and Coherence

As for sample size, DK, FR, and LU use administrative data. FI has 550 enterprises in the sample and 89 500 in an administrative register. DE has samples representing about 8% of the population; 9 000 enterprises in wholesale trade, and 11 000 enterprises in the hotel and restaurant industry. Otherwise IT has 1 500 enterprises in a panel, AT and SE have 2 600 enterprises and ES has 20 000 enterprises (highest together with DE). The six clear figures for sample size add up to about 28 000 monthly and 24 000 quarterly questionnaires. The limited coverage has to be taken into account.

The response rates are somewhat low, compared to other indicators. IE, NL, and UK have figures of the order 60%. DE may have to estimate a third of the turnover value the first time. FI goes from 85 to 100%, and SE has 90-93%.

As for estimation models, some partly model-based procedures are used. UK has for the first release a pure forecast procedure for the third month of the quarter. A 'matched-pairs'-procedure was used to produce estimates for March due to a very low response rate. SE uses data from the VAT register for small enterprises; for most of them only the first two months are available. The third month is then estimated using the first two months on micro level together with shares from full responses in the same industry. LU uses X-11 ARIMA, and FR uses extrapolation with seasonally adjusted coefficients. IE has not yet decided on the estimation procedure, but some kind of matching and stratum-based expansion is likely. FI states that no model is used. Links between corresponding months in adjacent years are used. In case of re-organisation, only comparable pairs are used, and births and deaths are taken into account separately. AT estimates missing data in the completely surveyed stratum. DE estimates for non-response, using growth rates of responding enterprises. ES does not expect to use models. NL and DK do not use models.

As for accuracy measures and indicators, there are just a few. FI, IT, NL, and UK use revisions, IT also deviations between infra-annual and annual statistics. For FI, the revision of monthly year-on-year change between first and final release is 1.0 per cent units on average (reference period: January–July 2000). For NL, differences between first and last publication are less than 5%. SE has confidence intervals for turnover between 1-2% on each NACE 2-digit level.

DK, FR, and SE state coherence with annual statistics. DE calculates the annual index from the twelve monthly ones. FI says not exactly; no synchronising procedure. UK does not benchmark but makes 'coherence adjustments'. NL uses the same sample. IE makes comparisons but there are no decisions for benchmarking. AT compares change rates with information from the SBS. (IT uses benchmarking for rebuilding of the time series.) LU states non-coherence, since the annual statistics cover also annual VAT declarations.

### **Some concluding notes for Services Turnover**

Most countries have an indicator, but in many cases the coverage is restricted. The indicator is monthly in AT, DE, FI, FR, and LU. It is quarterly in DK, ES, IE, IT, NL, SE, UK; with an experimental monthly index in UK. Two countries have less detail first. The survey is mandatory in most countries. DK, FR, and LU use administrative data. NL has administrative registers as an additional source in some cases. Mail questionnaire dominates the data collection. All countries use the full reference period. More than 50 000 enterprises are sampled. It is important to note, though, that the coverage is limited. Response rates are somewhat low in comparison with other indicators.

## **12. FOREIGN TRADE, EXTRA-EU**

This indicator is for most countries not separate. Instead there is a publication for foreign trade, and the intra-EU part takes longer time. LU and AT emphasise that there is a special delivery to Eurostat for extra-EU trade. All countries have month as the reference period. Depending on customs declaration, there may be a variation in the days included in a month.

All countries publish monthly. There are also quarterly and annual publications. The level of detail may vary. ES has a monthly advance and a final annual publication, with the same detail. Each of FI and SE has a sequence of publications, starting from preliminary total figures for exports and imports, and continuing with more detail and with volumes etc. LU also has first estimations limited to aggregate levels. PT has preliminary and definitive results, with revisions each month; the last one together with December of the same year. The level is the same but not very detailed. In IT, the data become definitive at October the following year. The level becomes more detailed. GR has two releases, preliminary and final, with the same detail, CN-8. NL has three releases, after 6 weeks, three months, and a year. UK has provisional data and corrected main files.

The survey is mandatory in all countries. Except for NL, data are collected through the Customs. The statistical office gets the data electronically. The declarations are on paper or on some other medium, such as diskette or online.

The production and simultaneously release time in calendar days is shown in the table below. ES has on average 56 days, but it varies due to verification and correction problems. IE similarly has 42-56 days, depending on data quality issues. FI has 42, 63, and 91 days for monthly statistics, with the first one only on total level. Similarly, SE has 25 days for the early release without breakdown and 41-44 days for detailed statistics. IT has 30 days; 55 days for intra-EU.

AT	BE	DE	DK	ES	FI	FR	GR	IE	IT	LU	NL	PT	SE	UK
42	36?	40	40-45	~ 56	63	50?	50	42-56	30	~ 56	~ 38	~ 43	41-44	20-25

As for the main criteria for the publication time, many countries (AT, DE, LU, NL, PT) state regulations or international guidelines, a few (ES, GR) national requests, and a few others (IT, SE, UK) user requests. UK has also completeness of data. IE similarly has both timeliness and quality (accuracy). DK refers to intra-data and to BoP statistics.

As for shortening the production time, FI is working on going from 6 to 4 weeks. SE is close to the Action Plan and expects to meet that request in the future. Intra-EU-statistics is the main problem for DK, ES, IT, and NL – or at least a main problem. AT, IT, and PT see the dependence on Customs as limiting the possibilities. IE is concerned with coverage and quality (accuracy) in general.

DE has as a goal further improvement in timeliness through increased use of technology. LU will work on estimation procedures to tackle the bias problem with a short production time

LU and NL have plans for an early release at an aggregate level. UK has for intra-EU but not for extra-EU trade. IT works on advanced estimates but with problems for intra-EU only.

### Accuracy and Coherence

There is not a “normal” sample size but a large number of declarations. IT has about 900 000 records each month. UK has about 114 000 traders (export, import, or both ways).

The response rates are also not “normal”. Data may be delayed, though, due to late responses or editing procedures. FI has about 85% to 90% in the preliminary statistics. LU has not much more than 60% in the first round, but 80% to 85% in the second round, and then around 90% or more. NL has on average 80% after 6 weeks, approximately 90% after 3 months, and 95% after one year.

As for estimation models, LU uses time series models to make estimates for the main product groups of major traders. DK has a few model-based procedures for outliers and values below the statistical threshold.

As for accuracy measures and indicators, nearly all countries reply with revisions (DE, FI, IE are exceptions, stating that accuracy calculations are not performed etc.). UK conducts error analysis exercises, which includes processing capabilities and accuracy.

A few countries provide numerical values for the accuracy. DK has a deviation of 1-2% for totals (larger for detailed figures) ES has errors below 5% (bearing in mind a limited scope of the system), NL reports (for 1999) average value differences between first and last figures of 1-5%, and UK has an accuracy at BoP level within less than 2%. LU states a need to improve the estimation for the last two months because of a systematic bias.

All countries use data for the whole calendar month. ES notes that the data forwarded to Eurostat only include entries made during the first twelve days of the following month.

In nearly all countries monthly data are added up to the year, ensuring coherence with annual statistics. A few countries answer not relevant or not applicable.

### **Some concluding notes for Foreign Trade**

Except for NL, the data collection is through Customs. The statistics are monthly. There may be delays in data. Most countries publish extra- and intra-trade together, and publication time is rather determined by intra-EU-trade. The release time after the month varies between 20 and 56 days.

## **13. EUROSTAT RESULTS**

In order to make the comparison between the EU and the US clearer, Eurostat has filled in the questionnaires. The different releases, the production time (in itself and in comparison with those of Member States), estimation models, accuracy, coherence, and criteria for production time are among the interesting pieces of information. Especially the information on GDP is rich. There is considerable item non-response. Hence, the description is uneven.

The LFS is published through the database New Cronos, which is updated as soon as data is received and validated and through a paper publication, which is published when data have been checked and validated for the last of the 15 Member States. It is stated in the LCI context that Eurostat has a principle of 24 hours. Aggregates are ready in 24 hours after receiving the last data needed, but there is some delay due to the present policy of news release. The updating of countries' figures in New

Cronos within 24 hours after the national publication is also done for GDP and employment NA figures.

Taxes are not yet published. Statistics on Employment, domestic concept (tied to NA) are not published regularly, but in the near future there will be two releases, after 100 and 120 days. It is stated that differences can arise with LFS statistics. – The production/release times are shown below for each indicator. There is a variation. The difference is partly between monthly and quarterly statistics. Within short-term statistics, the releases on employment in industry, production in construction, and turnover in other services are quarterly. GDP has three releases. External trade has first estimates and revised figures at the next publication, i.e. after 80 days. There is for extra-EU trade data a hope to shorten the production time by about a week.

QNA GDP	PubFi Taxes	LMSt LCI	Cont. LFS	Empl. dom.	Ind. Prod.	Ind. Empl.	Ind. PPI	Cons. Prod.	Ret.tr. Turn.	Serv. Turn.	Extra- EU tr.
70 100 120	90-95	90-100	?	100	50	90	30-35	55	60	90	50

For most indicators, models are used for Member States that have not responded in time to be included. An ARIMA forecast is stated for indicators 6-12, needing at least some data for each country. In many cases there is a minimum request of 60% in terms of weights, i.e. value added for production indices, employment for persons employed, and turnover for turnover indices in retail trade and other services. Employment, domestic concept, is tied to the NA described below.

For Q-GDP the procedure is as follows. The estimate of the quarterly figures related to the euro zone and the European Union are based on a statistical model of temporal disaggregation (Chow and Lin model completed by a Denton multivariate procedure). The quarterly figures are obtained on the basis of the available quarterly information (differences in the three releases) and the annual related information for all the 15 countries. The quarterly information is used as an indicator to give the movement of the quarterly GDP while the annual information is used to fix the level of the aggregate. Hence, there is by construction coherence between quarterly and annual statistics.

The countries in the three GDP-releases: (1) DE, FR, IT (partially confidential), NL, BE (only GDP), and UK - depending on the quarter Spain; (2) as in the first release plus DK, ES, IT (published figures), AT, FI, SE, FR (second release), UK (revised figures); (3) as in the second release plus BE (complete set), NL (complete set) and PT. The accuracy measures normally used include analyses of revisions and confidence band of the model. The magnitude of revisions (quarter on quarter) is restricted to 0.2 in terms of growth rates. It is noted that the trade off between timeliness and quality is quite sensitive. This will be seen more clearly than now when Eurostat starts to publish a flash estimate at 45 days.

For foreign trade it is noted that at present the first estimates of eurozone and EU imports and exports are accurate to about 2-3%.