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**General Principles Underlying the Harmonised Business and Consumer
Surveys**

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PART A

THE JOINT HARMONISED EU PROGRAMME OF BUSINESS AND CONSUMER SURVEYS

1. INTRODUCTION

Business and consumer surveys provide essential information for economic surveillance, short-term forecasting and economic research. Moreover, they are widely used to detect turning points in the economic cycle. Surveys are therefore a key complement to official statistics, which are often available after long delays. The survey data generated within the framework of the Joint Harmonised EU Programme of Business and Consumer Surveys are particularly useful for monitoring economic developments at Member State, EU and euro-area level. High frequency, timeliness and continuous harmonisation are among their main qualities.

The Commission's harmonised survey programme, managed by the Directorate-General for Economic and Financial Affairs (DG ECFIN), was set up in 1961, and its scope has since expanded considerably in terms of both countries and sectors covered. The data published every month by DG ECFIN are derived from surveys conducted by national institutes in the Member States and the candidate countries. With these data, DG ECFIN builds composite indicators to track cyclical movements in a specific sector or in the economy as a whole. The survey results are then used by DG ECFIN for economic analysis, surveillance and short-term forecasting. Outside the Commission, the ECB, central banks, research institutes and financial institutions frequently use the EU survey data for both qualitative and quantitative analysis.

2. GENERAL PRINCIPLES UNDERLYING THE HARMONISED BUSINESS AND CONSUMER SURVEYS

2.1. Overview of the harmonised survey programme

Past and future developments in the survey programme

The Joint Harmonised EU Programme of Business and Consumer Surveys (hereafter referred to as the BCS programme) was launched by the Commission decision of 15 November 1961.¹ The first survey was the harmonised business survey in the manufacturing industry conducted in 1962. Since then, the sector coverage of the programme has widened considerably. The BCS programme was extended to the construction sector and to investment plans in the manufacturing sector in 1966, to consumers in 1972, to the retail trade in 1984, and finally to the services sector in 1996. Since 2006, the Commission has launched a survey in the financial services sector at EU level. The sensitivity of this sector with regard to confidentiality, together with its idiosyncrasies in terms of cyclical behaviour, were the reasons behind the separation of this sector from the general services sector survey.

Meanwhile, the geographical coverage of the programme has been regularly extended to include all Member States as well as the candidate countries. In January 2010, the programme encompassed the 27 Member States of the European Union and 3 candidate countries (Croatia, Turkey, the FYROM). The integration of the candidate countries into the programme at an early stage is necessary in order to provide reliable and comparable data to follow their economic situation, and to guarantee the production of accurate EU aggregates

¹ The BCS programme is implemented by DG ECFIN pursuant to the Commission's institutional prerogatives. At present, this programme is governed by Commission Decision C(97)2241 of 15 July 1997 and Commission Communication COM(2006)379 of 12 July 2006.

once these countries become members of the EU. For instance, the 2004 enlargement was reflected in the programme by a smooth and timely transition to new aggregate indicators.

Harmonisation and Commission financial support

The harmonised surveys are carried out at national level by partner institutes such as ministries, statistical offices, central banks, research institutes, business associations or private companies. The surveys are conducted according to a common methodology, which consists essentially of harmonised questionnaires and a common timetable (see Section 2.2).

The institutes are selected by the Commission through a call for proposals every 3-4 years. The Commission supports their activity with action grants, which are limited to a maximum of 50% of the total costs of the surveys. These grants are designed to cover the costs associated with the adoption of the harmonised methodology. In contrast, when the national institutes have no clear interest or purpose in conducting a particular type of survey, the Commission concludes a service contract with the selected institute. In such cases, the Commission covers the full cost of the survey and has the copyright of the data.

Survey frequency and sample size

Five surveys are currently conducted on a monthly basis in the following areas: manufacturing industry,² construction, consumers, retail trade and services. Some additional questions are asked on a quarterly basis in the surveys in industry, construction and among consumers. In addition, an investment survey of the manufacturing sector, which gathers information on companies' investment plans, is conducted twice a year.

The *sample size* for each survey varies across countries according to the heterogeneity of their economies, and is generally positively related to their respective population size. About 125 000 firms and almost 40 000 consumers are currently surveyed every month across the EU. The sample of the industry survey includes more than 38 000 units that are surveyed every month, while the biannual investment survey includes over 44 000 units. The sample size for the services survey exceeds 34 000 units. In the case of the retail trade and construction surveys, the samples consist of more than 31 000 and 20 000 firms respectively.

Balances and composite indicators

Answers obtained from the surveys are aggregated in the form of "balances". Balances are constructed as the difference between the percentages of respondents giving positive and negative replies. The Commission calculates EU and euro-area aggregates on the basis of the national results and seasonally adjusts the balance series.

The balance series are then used to build several kinds of sentiment indicators. For example, for each surveyed sector, the Commission calculates confidence indicators as arithmetic means of answers (seasonally adjusted balances) to a selection of questions closely related to the reference variable they are supposed to track (e.g. industrial production for the industrial confidence indicator). These indicators thus provide information on economic developments in the different sectors. Besides, the results for the five surveyed sectors are aggregated into the Economic Sentiment Indicator (ESI), whose purpose is to track GDP growth at Member State, EU and euro-area level. The calculation of balances, confidence indicators and ESI is described in detail in Chapter 3.

² In the rest of the publication, this survey is referred to as the industry survey.

The Commission produces other indicators like the factor model-based Business Climate Indicator, which uses the results of the industry survey and is designed to assess cyclical developments in the euro area or the turning point index, to assess the probability of occurrence of turning point in the euro area.

2.2. Common properties of the surveys

Harmonisation

The principle of harmonisation underlying the Commission's survey programme aims to produce a set of comparable data for all countries. Harmonisation is essential to allow the comparison of business cycles in the different Member States as well as the calculation of meaningful business cycle indices for the euro area and the EU as a whole.

To achieve comparability between countries, the BCS programme is governed by two basic principles:

- use by all national institutes of the same harmonised questionnaires; and
- conduct of the national surveys, and transmission of the results, according to a common timetable.

Harmonisation does not mean uniformity. The national questionnaires may include additional questions, beyond the harmonised ones. Similarly, the sectoral breakdown in the questionnaires may be more detailed than the one set in the programme. Also, the national institutes are free to organise the fieldwork the way that best suits their needs. In particular, the sample design, the sample size, the survey mode, and other methodological considerations are left to their discretion. Nevertheless, institutes are invited to implement the international guidelines on data collection and survey design recently developed by the Commission and the OECD in cooperation with the national institutes (see part B).³

The Commission plays a leading role in the evolution of the common methodology of the BCS programme. It regularly commissions feasibility studies on relevant methodological issues and organises an annual workshop with all participating institutes in order to discuss harmonisation issues, such as changes in the questionnaires and developments in the survey programme. The Commission also organises every two years a joint meeting with the OECD with a view to examining methodological issues of common interest to both EU and non-EU countries.

Representative sample

The participating institutes should ensure that the samples chosen for each survey are representative of the sector. The sample size must be large enough to provide reliable data. This issue is discussed in more detail in Section 4.1.

³ The quality of the survey methodology, and in particular observance of the international standards for the conduct of business and consumer surveys, is taken into account when selecting the institutes participating in the harmonised survey programme.

Timetable

The *timing* is common to all the harmonised surveys. Fieldwork for the monthly surveys is generally performed in the first two-three weeks of each month, while the quarterly surveys are carried out in the first half of each quarter (January, April, July and October). Likewise, the questions that are asked only on a quarterly basis are included in the questionnaires in January, April, July and October. The survey results are sent by e-mail to the Commission at least four working days before the end of the reference month and in accordance with a predefined format. The six-monthly investment surveys are carried out in March/April and in October/November, and the results are sent to the Commission before the end of May and December respectively.

Questionnaires

One essential feature of the BCS programme is the use by participating institutes of harmonised questionnaires. The standard questionnaires are given in [Annex 1](#). In practice, the questionnaires used by the institutes may differ slightly from the harmonised ones, either due to the inclusion of additional questions or as a result of a different wording of the questions in the national language. In this regard, the important point is not to have a literal translation of the original question in English but to retain the meaning of the question. Other differences in the questionnaires (e.g. use of different concepts, of different reference periods, missing questions, etc.) should be avoided in order to ensure comparability of survey results across countries. Finally, the questionnaires can occasionally include additional pilot questions, whose results are not necessarily made public.

Monthly business and consumer surveys

The harmonised surveys provide information on a wide range of variables that are useful to monitor cyclical developments. Table 1 presents the list of variables covered in the monthly business and consumer surveys. As mentioned previously, most of the questions are asked on a monthly basis, but a few additional questions are added every quarter to the surveys in industry, construction and among consumers. Nearly all the questions are of a qualitative nature.

The *industry survey* is largely qualitative. The main questions refer to an assessment of recent trends in production, of the current levels of order books and stocks, as well as expectations about production, selling prices and employment. In addition, the survey provides on quarterly basis quantitative information on two variables that are not reported in conventional statistics, namely capacity utilisation and the number of months of production assured.

In view of the scarcity of national account data on building activity, *construction surveys* are an important source of information concerning short-term developments in this sector. The construction survey provides qualitative information, with the exception of one quantitative question on the number of months of production secured.

The information provided by the *retail trade survey* is entirely qualitative. Managers are asked about their assessment of recent developments in their business situation, of the current level of stocks, and their expectations about a number of economic variables (production, new orders and employment).

The purpose of the *consumer survey* is twofold: first, to collect information on households' spending and savings intentions, and second, to assess their perception of the factors

influencing these decisions. To this end, the questions are organised around four topics: the households' financial situation, the general economic situation, savings and intentions with regard to major purchases. The consumer survey is entirely qualitative.

The *services survey* provides information about the managers' assessment of their recent business situation, and of the past and future changes in their company's turnover and employment. All the replies are qualitative.

All the monthly surveys have a similar *answer scheme*. For qualitative questions, answers are usually given according to a three-option ordinal scale: "increase" (+), "remain unchanged" (=), "decrease" (-); or "more than sufficient" (+), "sufficient" (=), "not sufficient" (-); or "too large" (+), "adequate" (=), "too small" (-). In some cases, respondents have the choice between four, five or six options. In the consumer survey, a five-option ordinal scale is the rule.

Table 1: Variables covered in the monthly business and consumer surveys

Type of survey	Monthly questions	Quarterly questions
Industry	Production, past 3 months Production, next 3 months Total order books Export order books Stocks of finished products Selling prices, next 3 months Firm's employment, next 3 months	Factors limiting production Production capacity, current Months of production secured Order books, past 3 months Export order books, next 3 months Capacity utilisation Competitive position, domestic market Competitive position, EU markets Competitive position, extra-EU markets
Construction	Business activity, past 3 months Factors limiting production Domestic order books Firm's employment, next 3 months Selling prices, next 3 months	Months of production secured
Retail trade	Business activity, past 3 months Business activity, next 3 months Stocks of goods Orders placed with suppliers, next 3 months Firm's employment, next 3 months	
Services	Business situation, past 3 months Turnover, past 3 months Turnover, next 3 months Firm's employment, past 3 months Firm's employment, next 3 months	
Consumers	Financial situation, past 12 months Financial situation, next 12 months General economic situation, past 12 months General economic situation, next 12 months Consumer prices, past 12 months Consumer prices, next 12 months Unemployment, next 12 months Major purchases of durable consumer goods, current environment Major purchases intentions, next 12 months Savings, current environment Savings intentions, next 12 months Capacity to save	Purchase of a car, next 12 months Purchase of a house, next 12 months Home improvements, next 12 months

Source: European Commission services

The answer scheme is different for quantitative questions. These are the questions about capacity utilisation and about the period of production assured. Here, answers are requested in percentage of full capacity or in number of months respectively.

For questions on factors limiting production, a list of possible factors is proposed, and respondents are requested to select one or several factors (yes/no answer).

Investment survey

The investment survey is carried out twice a year – in March/April (“spring survey”) and in October/November (“autumn survey”) – among companies in the industry sector. In a large number of countries, the survey is carried out as an attachment to the industry survey, using the same panel of companies. In some countries, however, samples may be different and the two surveys may be conducted by different institutes.

Table 2: Variables covered in the half-yearly investment survey and answer scheme

Survey	Variable	Answer scheme
March/April survey:		
	Change in investment from year t-2 to year t-1	% change
	Change in investment from year t-1 from year t	% change
October/November survey:		
	Change in investment from year t-1 to year t	% change
	Change in investment from year t to year t+1	% change
	Type of investment planned for years t and t+1	yes/no
	Factors influencing investment for years t and t+1:	
	- demand	(++), (+), (=), (-), (--), N
	- financial resources or expected profits	(++), (+), (=), (-), (--), N
	- technical factors	(++), (+), (=), (-), (--), N
	- other factors	(++), (+), (=), (-), (--), N

Note: (++) = very stimulating, (+) = stimulating, (=) = no influence, (-) = limiting, (--) = very limiting, N = no answer.

Source: *European Commission services*

The spring and autumn surveys have different questionnaires (Table 2; for the complete questionnaires, see Annex 1.). In spring, managers are asked about the percentage change in investment of their company from year t-2 to year t-1 and from year t-1 to t. In autumn, they are asked about the percentage change in investment of their company from year t-1 to year t and from year t to t+1. The autumn survey also contains a question on the type of investment (replacement, extension of production capacity, technical progress, other) planned in years t and t+1, as well as a question on the factors driving investment (demand, profitability, technical factors, others) planned in years t and t+1.

Regarding questions on the percentage change of investment, in the absence of any further information, it can be assumed that companies report nominal changes rather than real (inflation-adjusted) changes. Indeed, many companies would probably find it hard to provide figures on the growth of real investment. However, from an economic point of view, real investment is of equal, if not higher, interest. For this reason, DG ECFIN publishes also real estimates by using the deflator for equipment investment in the AMECO⁴ database.

⁴ The AMECO (Annual Macroeconomic) database is run by DG ECFIN and is publicly available on the internet.

The *answer scheme* for the questions on the type of investment and on the factors influencing investment is different. Regarding the former question, companies are requested to indicate the dominant type of investment, while the answer scheme for the question on the factors influencing investment is of the traditional qualitative type (“very stimulating”, “stimulating”, “no influence”, “limiting”, “very limiting”).

For most questions, respondents have the choice between three options. A special scale is used to score individual answers. A value of 1 is assigned to negative (-) replies, a value of 5 to indifferent (=) replies, and a value of 9 to positive (+) replies. Then, the individual replies are aggregated for each country without weighting. Thus grades between 5 and 9 indicate that positive answers prevail or that a majority of respondents expect improving trends, while grades between 1 and 5 reflect mainly negative replies or expectations of decreasing trends. To compute the aggregates for the country groups or regions, the country results are weighted according to the share of the specific country’s exports and imports in total world trade.

Classifications

Since May 2010, for the business surveys (industry, retail trade, construction, services and investment), survey results are broken down by branches according to the Classification of economic activities in the European Community (NACE), Rev. 2 at the two-digit level. For the consumer survey, respondents are categorised according to five criteria: income, occupation, education, age and sex.

3. COLLECTING AND PROCESSING BUSINESS AND CONSUMER SURVEYS

3.1. Sampling

The survey samples are derived from a frame, which is supposed to register all the units of the whole population under question. The frame can be created from official or statistical registers, or from membership lists of business associations and chambers of commerce. Taking into account the various changes that might occur in the population (mergers, bankruptcies, starting of new firms, etc.), a regular update of the frame is necessary in order to keep it representative. Good coverage of the frame is indeed very important to secure the quality of the surveys.

The coverage rate of the sample, generally measured via turnover or employment, indicates at which percentage rate the sample represents the frame. The sample size needs to be sufficiently large to give estimates of the balances and other items of interest which are reliable enough to meet users’ requirements. The appropriate sample size therefore depends on the level of precision required by users and is determined mainly by the variance of the individual responses. Given that large countries tend to show larger structural heterogeneity than very small countries, the sample size tends to be positively related to the size of the economy.

The participation of managers and consumers in the surveys is voluntary in most countries.⁵ Naturally, some are unable or unwilling to respond. Non-response is a problem, in particular

⁵ Participation is, however, compulsory in Spain, France, Italy, Luxembourg, the Netherlands, Poland and Portugal for some or all surveys.

if the potential responses from the non-respondents would have deviated systematically from those who did respond. This would introduce a bias, i.e. the answers would no longer be representative of the population, which preferably should be corrected for (for suggested treatments of non-responses, see [Part B.2](#) on international recommendations on the improvement of response rates). A high response rate, i.e. the degree to which managers or consumers answer the questionnaires, is therefore critical for the quality and the reliability of the results.

In practice, a trade-off typically emerges between the desired precision and the required cost of a survey. In general, there are three methods of data collection such that the information collected can be used to draw inferences about the population. First, one can collect data from all units in the population. This is a costly and lengthy procedure unless the population is small. Second, one can collect data from a sample of units that have been selected from the population with the intention that they should be representative of that population. A sample of this kind is called a purposive sample. In order to draw inferences about the population using a purposive sample, a number of assumptions have to be made about the representativeness of the surveyed units. In general, there are limitations to the inferences that can be drawn from purposive samples when the probability of selection is not known. Third, data can be collected from a random sample of units which have been selected with known probabilities of selection from the population. In this case, no assumptions about the representativeness of the data collected are needed. Moreover, there are well-known techniques for determining the precision of estimated totals and averages.

In order to make a random sample more efficient (a smaller sample for a given level of precision), many institutes use some form of stratified random sampling that involves the separation of the population into non-overlapping sub-populations, called strata, which have similar variance with regard to the key variables covered in the survey. Stratification is applied according to different criteria. The stratification criteria used for business surveys are mainly firm size and activity sector. For consumer surveys, the sex, age, education, income and occupation of the person are commonly used for the selection of the respondents.⁶ The technique of stratified sampling is described in more detail in Box 1.

⁶ The consumer surveys are in some countries carried out by so-called quota sampling. This sampling technique means that respondents (consumers) are searched for until a certain, predetermined, quota of respondents is reached. A major shortcoming of this sampling method is that, since the sample is not random, no inference regarding the population can be drawn.

Box 1: A note on stratified sampling

Introduction

In stratified sampling the population is divided into subpopulations, called strata. The strata are defined on the basis of some *ex-ante* observable characteristics of the population that are supposed to be related to the variable of interest. For example, the population may be stratified by geographic region or firm size. Samples are then drawn from each stratum, and from these samples it is possible to draw inference about the whole population. Besides drawing inference on the population as a whole, a major advantage of stratified sampling is that one can also draw inferences for each stratum. In addition, stratified sampling can be more efficient, in terms of either lower sample sizes or higher precision, than non-stratified sampling techniques. Since the strata are defined so that they are relatively homogeneous, the variability within each stratum is smaller, the sample can be reduced or more precise estimates received.

Stratified sampling

Divide the population of N units into non-overlapping subpopulations of N_1, N_2, \dots, N_H units (strata). By construction, the strata units add up to the number of units in the whole population, i.e. $N_1 + N_2 + \dots + N_H = N$. Once the strata are defined, a sample is drawn from each, with the drawings being made independently of each other. If the drawings are random, then this procedure is described as stratified random sampling.

An important issue in stratified sampling is how to allocate the sample over the strata, i.e. to determine the sample size in each stratum. One way of doing this is to simply let the sample size in stratum h be weighted by the stratum size in the population:

$$n_h = n \frac{N_h}{N},$$

where n_h is the number of units drawn from stratum h , while n is the total number of units drawn from the population. In this case, the stratification is referred to as stratification with proportional allocation of stratum sample size (also known as a “self-weighting” sample). When numerous estimates have to be made, a self-weighting sample is time (and cost) saving.

In addition to practical considerations, such as limitations in time and costs, when deciding on sample sizes for each stratum, estimates that are unbiased and with relative smaller variances (so called “best” estimates) are to be favoured. Suppose that c_h , the cost of the sample in the h th stratum, is proportional to the size of the sample in each stratum (n_h). Then it can be shown that for the estimates to be “best”, n_h has to be proportional to the size of stratum h and its internal variance. Furthermore, n_h has to be inversely proportional to the cost of sampling in h . More technically, this can be expressed as:

$$n_h = k \cdot \frac{N_h \cdot S_h}{\sqrt{c_h}}$$

where k is a constant and S_h denotes the variance within stratum h . Thus, for a given stratum, a large sample should be taken if (a) the stratum is large,

(b) the variance within the stratum is high, and

(c) sampling is less costly in the stratum.

In the special case where the costs are identical in each stratum, it can be shown that the optimal allocation in the previously described sense for a fixed sample of n is:

$$n_h = n \frac{N_h S_h}{\sum N_h S_h}$$

This method of choosing sample sizes is often referred to as Neyman (optimum) allocation. In contrast to the proportional allocation method, this method also takes into account the relative variance within the stratum. If the variance across strata is large, Neyman allocation therefore creates more efficient estimates than proportional allocation.

In addition, it can be shown that under certain simplifying conditions, Neyman allocation yields a smaller variance than the variance resulting from simple random sampling. There are two components that help decrease the variance of the estimates, as the method changes from simple random sampling to stratified sampling and to Neyman's optimum allocation. The first component is the result of the elimination of differences among the stratum means. The second is the result of the elimination of the difference in the variance between optimum and proportional allocation.

For business surveys, the sample does not differ much from one period to another. In most cases, a panel of companies is established and surveyed each month. This approach is motivated by the structure of the production system itself, which does not change significantly from one period to another and is also often highly concentrated. It is then essential to question the dominant companies in each branch. There are a number of advantages to be gained from always questioning the same firms: notably, replies are received more quickly, and the variability of results between two successive surveys is also reduced, having a positive effect on the required sample size. It is therefore recommended that the same panel is maintained over time for business surveys and that it is updated at regular intervals, or that a smaller part of the sample is replaced each period (rotating panels).

According to OECD experience with BCS surveys,⁷ about 30 reporting units are sufficient to obtain an acceptable level of precision for each strata for which data are to be published. This rule of thumb implies, for example, that in a survey designed to produce results for ten kinds of activity, each broken down into 3 size classes, the sample size will need to be $30 \times 10 \times 3 = 900$. In other words, 30 respondents are required for each of the 30 cells (defined by activity and size) in the population. In practice this should be a maximum because some activities will be dominated by a few very large enterprises such that two or three responses might suffice.

3.2. Aggregation and weighting

Starting from each stratum, the percentages of answers to each reply option are calculated. Two alternatives are available at this stage: a simple counting of the answers or a weighted counting. In the first case, the numbers of positive and negative replies are counted, and then expressed as percentages of the total number of firms in the stratum. In the second case, a weighting coefficient is used for each firm representing an aspect of its size (for example, in terms of turnover, employment or production). The weighting scheme aims to improve the comparability of the survey responses and reference series, rather than having an *a priori* idea that larger firms judge or predict better.

⁷ See the OECD Handbook on Business Tendency Surveys, available at: <http://www.oecd.org/dataoecd/29/61/31837055.pdf>.

Whether weighted or not, the outcome for each stratum h , for each variable X , for a given month t , is a column vector

$X_h = (P_h, E_h, M_h)$ where P_h is the share reporting an increase, E_h is the share reporting no change, and M_h is the share reporting a decrease.

Having obtained the results for each stratum, the overall results are calculated as weighted averages of the results by strata. Weighting coefficients used at this stage reflect the relative significance of each stratum in the frame or population and are often derived from official statistics, such as the value added of a specific sector as a share of that of total manufacturing industry. The weighting in this case is used to improve the quality of the sample, by correcting any possible discrepancies of representation. Total results for each variable are then a vector

$$X = (\sum P_h \cdot w_h, \sum E_h \cdot w_h, \sum M_h \cdot w_h)$$

where w_h are the relative weighting coefficients for each stratum and $\sum w_h = 1$. Note also that, by construction, $\sum P_h \cdot w_h + \sum E_h \cdot w_h + \sum M_h \cdot w_h = 100$.

When business survey results are aggregated to higher levels, for instance at the European level, a weighted average of country results is obtained by applying relevant country weights (see Section 3.4).

3.3. Calculation of balances

On the basis of the distribution of the various options for each question, aggregate balances are calculated for each question. Balances are the difference between positive and negative answering options, measured as percentage points of total answers. In particular, if a question has three alternative options, “positive” (“up”, “more”, “more than sufficient”, “good”, “too large”, “increase”, “improve”, etc.), “neutral” (“unchanged”, “as much”, “sufficient”, “satisfactory”, “adequate”, etc.) and “negative” (“down”, “less”, “not sufficient”, “too small”, “decline”, etc.), and if P , E and M (with $P+E+M=100$) denote the percentages of respondents having chosen respectively the option positive, neutral, and negative, the balance is calculated as

$$B = P - M$$

In the case of questions with six options, i.e. the three options above plus “very positive” (“got/get a lot better”, “very much higher”, “increase sharply”, etc.), “very negative” (“got/get a lot worse”, “very unfavourable”, “fall sharply”, etc.) and “don’t know”, the balances are calculated on the basis of weighted averages. If P , E and M have the same meaning as in the previous paragraph, while PP denotes the percentage of respondents having chosen the option “very positive”, MM the percentage of respondents having chosen the option “very negative” and N is the percentage of respondents without any opinion (so that $PP+P+E+M+MM+N=100$), balances are calculated as

$$B = (PP + \frac{1}{2}P) - (\frac{1}{2}M + MM)$$

It is clear from the expressions above that balance values range from -100 , when all respondents choose the negative option (or the most negative one in the case of five-option questions) to $+100$, when all respondents choose the positive (or the most positive) option.

3.4. Calculating EU and euro-area aggregates

One of the main tasks of the Commission services (DG ECFIN) is the production of aggregate surveys for the EU and the euro area on the basis of the aggregate results received from the Member States. EU and euro-area aggregate replies to the questionnaires are calculated as weighted averages of the country-aggregate replies. The weights are the shares of each of the Member States in an EU (euro-area) reference series, and are smoothed by calculating a two-year moving average. The weights are usually updated every year in August. The reference series are extracted from AMECO and for the most recent period, where yearly reference series are not available, the Commission forecast is used.⁸

Table 3 summarises relevant information concerning the reference series used to compute the country weights.

Table 3: Reference series (AMECO database) used to compute the country weights

Survey	Reference series
Industry	gross value added at 2000 prices, total manufacturing industry and Investment
Investment	gross value added at 2000 prices, total manufacturing industry and Investment
Construction	gross value added at 2000 prices(, building and construction
Services	gross value added at 2000 prices, services
Retail Trade	private final consumption expenditure at 2000 prices
Consumer	private final consumption expenditure at 2000 prices

Source: European Commission services

On this basis, the percentage for each alternative answer to each question for the EU and the euro area is calculated as the weighted average of the corresponding percentages in each Member State or each euro-area member.

3.5. Seasonal adjustment

Leaving aside strikes, elections, large exchange-rate movements, very cold weather and other special events, business and consumer survey data record opinions that may be influenced by other events taking place at the same time every year. This is the case of, for instance, regular events, such as Easter, Christmas, certain public holidays, or the receipt of extraordinary wage bills in a given month of the year. Even though respondents are explicitly asked not to take into account such seasonal variations, in practice the answers frequently show seasonal patterns. Such variations in businesses' and consumers' perceptions, opinions or expectations should ideally be eliminated when comparing two consecutive months. This is the goal of seasonal adjustment.

⁸ For the weights currently used, see http://ec.europa.eu/comm/economy_finance/indicators/business_consumer_surveys/user_guide_country_weights.zip.

Once the balances per question for each survey at the aggregate (country, EU, euro-area) level are calculated, they are seasonally adjusted. The Commission is currently using Dainties as the seasonal-adjustment algorithm.. This method has yielded satisfactory results for business and consumer survey data for many years. The main advantage of Dainties is the absence of revisions when adding data at the end of the time series. As business and consumer survey data are economic agents' opinions at a certain point in time, revisions of the historical data seem undesirable.

3.6. Calculation of confidence indicators and economic sentiment indicators

Business and consumer surveys provide monthly judgements and anticipations concerning diverse facets of economic activity in the different sectors of the economy: industry, services, construction and retail trade, as well as consumers. Based on the detailed results of the Harmonised Programme, the Commission calculates and publishes a set of monthly sentiment indicators⁹. First, for each of the five surveyed sectors, so-called confidence indicators are produced to reflect overall perceptions and expectations at the individual sector level in a one-dimensional index. Secondly, in order to be able to track overall economic activity, the broader Economic Sentiment Indicator (ESI) has been calculated since 1985, summarising developments in all five surveyed sectors.

Each confidence indicator is calculated as the simple arithmetic average of the (seasonally adjusted) balances of answers to specific questions chosen from the full set of questions in each individual survey. The selection of questions was guided by the aim of achieving an as highly as possible coincident correlation of the confidence indicator with a reference series, such as year-on-year growth in industrial production, at EU or euro-area level. The balance series from the selected questions are not standardised prior to their aggregation.

Based on the complete set of balance series underlying the individual confidence indicators, the ESI combines judgements and attitudes of producers and consumers by means of a weighted aggregation of standardised input series. Roughly speaking, the Economic Sentiment Indicator can be viewed as a summary of the five sector-specific confidence indicators. Before presenting the composition and weighting scheme underlying the ESI in more detail, it is useful to look first at the composition of the individual confidence indicators.

Finally, the last part of this section contains a description of a composite indicator for the euro area based on factor methodology. This indicator only refers to manufacturing industry and can therefore be seen as a complement to the industrial confidence indicator.

3.6.1. Industrial confidence indicator

The industrial confidence indicator is the arithmetic average of the balances (in percentage points) of the answers to the questions on production expectations, order books and stocks of finished products (the last with inverted sign). Balances are seasonally adjusted.

Questions (see [Annex 1.1](#) for the complete questionnaire):

Q2 Do you consider your current overall order books to be...?

⁹ In the following text, sentiment indicators refers to a specific kind of composite indicators, exclusively based on surveys data. On the contrary, composite indicators may have in addition macroeconomic or financial data as components

- + more than sufficient (above normal)
- = sufficient (normal for the season)
- not sufficient (below normal)

Q4 Do you consider your current stock of finished products to be...?

- + too large (above normal)
- = adequate (normal for the season)
- too small (below normal)

Q5 How do you expect your production to develop over the next 3 months? It will...

- + increase
- = remain unchanged
- decrease

3.6.2. *Services confidence indicator*

The services confidence indicator is the arithmetic average of the balances (in percentage points) of the answers to the questions on business climate and on recent and expected evolution of demand. Balances are seasonally adjusted.

Questions (see [Annex 1.2](#) for the complete questionnaire):

Q1 How has your business situation developed over the past 3 months? It has ...

- + improved
- = remained unchanged
- deteriorated

Q2 How has demand (turnover) for your company's services changed over the past 3 months? It has...

- + increased
- = remained unchanged
- decreased

Q3 How do you expect the demand (turnover) for your company's services to change over the next 3 months? It will...

- + increase
- = remain unchanged
- decrease

3.6.3. *Consumer confidence indicator*

The consumer confidence indicator is the arithmetic average of the balances (in percentage points) of the answers to the questions on the financial situation of households, the general economic situation, unemployment expectations (with inverted sign) and savings, all over the next 12 months. Balances are seasonally adjusted.

Questions (see **Annex 1.3** for the complete questionnaire):

Q2 How do you expect the financial position of your household to change over the next 12 months? It will...

- ++ get a lot better
- + get a little better
- = stay the same
- get a little worse
- get a lot worse
- N don't know.

Q4 How do you expect the general economic situation in this country to develop over the next 12 months? It will...

- ++ get a lot better
- + get a little better
- = stay the same
- get a little worse
- get a lot worse
- N don't know.

Q7 How do you expect the number of people unemployed in this country to change over the next 12 months? The number will...

- ++ increase sharply
- + increase slightly
- = remain the same
- fall slightly
- fall sharply
- N don't know.

Q11 Over the next 12 months, how likely is it that you save any money?

- ++ very likely
- + fairly likely
- not likely
- not at all likely
- N don't know.

3.6.4. Retail trade confidence indicator

The retail trade confidence indicator is the arithmetic average of the balances (in percentage points) of the answers to the questions on the present and future business situation, and on stocks (the last with inverted sign). Balances are seasonally adjusted.

Questions (see Annex **1.4** for the complete questionnaire):

Q1 How has (have) your business activity (sales) developed over the past 3 months?
It has (They have) ...

- + improved (increased)
- = remained unchanged
- deteriorated (decreased)

Q2 Do you consider the volume of stock currently hold to be...?

- + too large (above normal)
- = adequate (normal for the season)
- too small (below normal)

Q4 How do you expect your business activity (sales) to change over the next 3 months? It (They) will...

- + improve (increase)
- = remain unchanged
- deteriorate (decrease)

3.6.5. *Construction confidence indicator*

The construction confidence indicator is the arithmetic average of the balances (in percentage points) of the answers to the questions on order book and employment expectations. Balances are seasonally adjusted.

Questions (see **Annex 1.5** for the complete questionnaire):

Q3 Do you consider your current overall order books to be...?

- + more than sufficient (above normal)
- = sufficient (normal for the season)
- not sufficient (below normal)

Q4 How do you expect your firm's total employment to change over the next 3 months? It will...

- + increase
- = remain unchanged
- decrease

3.6.6. *Economic Sentiment Indicator*

The Economic Sentiment Indicator is made up of the 15 individual components of the previously described confidence indicators. Explicit weights are allocated to the different sectors for the computation of the composite indicator:

- Industry: 40%
- Services: 30%
- Consumers: 20%
- Construction: 5%
- Retail trade: 5%

The given weights have been determined according to two criteria, namely “representativeness” of the sector in question and tracking performance vis-à-vis the reference variable. Corresponding to the broad scope of the ESI, the obvious reference variable is GDP growth, tracking the movements of the economy as a whole.

It is important to note that the above-mentioned weights are not directly applied to the five confidence indicators themselves but to their *standardised* individual component series. The prior standardisation is essential to make the individual component series comparable in terms of both their mean level and volatility before aggregation. Otherwise, component series with relatively high characteristic amplitude would dominate the evolution of the composite indicator, i.e. the nominal weights would not reflect the factual contribution of each component to the profile of the composite indicator.¹⁰

Since the confidence indicators described above are made up of the same, but *non-standardised* component series, the ESI cannot precisely be derived from applying the given sector weights to the five confidence indicators. In fact, it can occasionally happen that, due to the influence of some more volatile component series, the sum of the (weighted) confidence indicators shows movements that are not reflected in the ESI, summarising the properly standardised components. In the same way, impulses from rather damped components that are not visible in the confidence indicators may actually show up in the ESI.

The exact calculation of the ESI on the basis of its component series can be summarised by the following three simple steps:

(1) For each component $j = 1, \dots, 15$

$$Y_{j,t} = \frac{X_{j,t} - \bar{X}_j}{S_j} \quad \text{where} \quad \bar{X}_j = \frac{1}{T} \sum_{t=1}^T X_{j,t} \quad \text{and} \quad S_j = \sqrt{\frac{1}{T-1} \sum_{t=1}^T (X_{j,t} - \bar{X}_j)^2}$$

(2) $Z_t = \frac{\sum_j w_j \cdot Y_{j,t}}{(\sum_j w_j)_t}$ where $(\sum_j w_j)_t$ is the sum of the weights of the available series at time t

$$(3) ESI_t = \left(\frac{Z_t - \bar{Z}}{S_Z} \right) \cdot 10 + 100 \quad \text{where} \quad \bar{Z} = \frac{1}{T} \sum_{t=1}^T Z_t \quad \text{and} \quad S_Z = \sqrt{\frac{1}{T-1} \sum_{t=1}^T (Z_t - \bar{Z})^2}$$

The X_j variables represent the 15 components of the confidence indicators for industry (3 components), services (3), consumers (4), construction (2) and retail trade (3), as given in Sections 6.1 to 6.5 (seasonally adjusted balances).

The moments for standardisation (step 1) are computed over a frozen sample to avoid monthly revisions of the index. Currently, the sample runs from 1990:1 to $T = 2009:12$. Although the long-term moments of the balance series are fairly stable due to their stationary nature, the sample has to be extended periodically to include latest developments.

To compute the weighted average Z_t (step 2), the above-mentioned sector weights are divided by the number of opinion balances making up the related confidence indicator. So, for example, the three standardised balances relating to service confidence each receive a weight

¹⁰ For example, the long-term standard deviation of the components of the euro-area industrial confidence indicator varies between 13.4 and 4.8, for questions Q2 and Q4 respectively.

of 10%, adding up to the total services weight of 30%. As long as not all of the 15 components are available, the weighted sum of those series that are available is divided by the sum of the allocated weights.

In the last step (step 3), the resulting weighted average is scaled to have a long-term mean of 100 and a standard deviation of 10, where the same sample is used as for the standardisation of the individual components in step 1. Values greater than 100 indicate an above-average economic sentiment, whereas values below 100 indicate a below-average position. Assuming approximate normality, the imposed standard deviation of 10 implies that in about 68% of the cases the ESI will be within the range of 90 to 110.

The performance of the ESI, which summarises the attitudes and judgements of a large number of economic actors, should be compared with the performance of a reference variable which is also all-inclusive, recording movements in the economy as a whole. Hence, as mentioned previously, GDP growth is the obvious choice for testing the explanatory performance of the composite indicator.

4. DATA DISSEMINATION AND PUBLICATION

4.1. Publication of survey results

The Business and Consumer Survey results are published on the last working day¹¹ of each month by means of two press releases and are sent by e-mail to a selected group of news agencies. The publication calendar of the press releases is available on DG ECFIN's website at: http://ec.europa.eu/economy_finance/db_indicators/surveys/metadata/index_en.htm

The first press release reports the BCS results plus the confidence indicators and the Economic Sentiment Indicator (ESI). The second press release relates to the Business Climate Indicator (BCI). Both press releases are divided into two parts: a first part with comments on the main results of the surveys and a second part with detailed tables showing the results

Since January 2010, the Commission release the flash consumer confidence indicator for the EU and euro area, roughly one week before ESI press release. These results are based on the data available on the cut-off date. The estimation procedure combines historical data with information from those Member States for which data are available in the reference month. Experience has shown this procedure to be statistically reliable.¹²

All the data reported in the press releases plus additional data (long-time series, non-seasonally adjusted sector series and seasonally adjusted branch data) are freely downloadable from: http://ec.europa.eu/economy_finance/db_indicators/surveys/time_series/index_en.htm.

The results of the quarterly survey in the manufacturing sector are reported in the press release of the first month of the quarter (i.e. January, April, July and October). The results of the bi-annual survey on investments are reported in the January and June press releases.

¹¹ The December results are published early in January of the following year.

¹² Further information on the computation procedure can be found in the European Business Cycle Indicators of January 2010

4.2. Metadata

As already mentioned, the harmonised business and consumer surveys are carried out in a decentralised manner by individual institutes in the Member States. Notwithstanding the harmonised schedule and the common principle of representative sampling, the individual institutes are responsible for determining their sampling frame, sampling and survey methods.

All the information concerning the methodology used in each country for each survey as well as other useful information on the national organisation conducting the survey (such as the contact person) is available in the metadata section of DG ECFIN's BCS website at:

http://ec.europa.eu/economy_finance/db_indicators/surveys/metadata/index_en.htm

PART B

INTERNATIONAL GUIDELINES AND RECOMMENDATIONS ON THE CONDUCT OF BUSINESS AND CONSUMER SURVEYS

1. BACKGROUND

In November 2003, at the first joint European Commission–OECD Workshop on international development of business tendency and consumer opinion surveys (BTS/COS), several priority areas were identified for which further work was considered needed. Two of these were:

- improvement of response rates, minimisation of respondent load; and
- harmonisation of survey operations and technical design.

At the following OECD workshop on business and consumer tendency surveys in 2004, two multi-country task forces addressing these issues were launched. The work of these task forces was presented and discussed at the second joint European Commission–OECD Workshop in November 2005, and the ensuing recommendations were endorsed by the participants.

The purpose of this chapter is to disseminate the main results of the two task forces. The international guidelines are an essential tool for moving the harmonisation process forward, which is essential for facilitating the comparability of national survey results and the calculation of meaningful business cycle indices for the euro area and the EU as a whole. The list of recommendations presented in this chapter is not complete, but should serve as a first introduction to best practices for survey conducting institutes. Institutes participating in the BCS programme are invited to acquaint themselves with the details, as they are expected to implement the international guidelines when conducting surveys within the harmonised programme.

The following two sections summarise the recommendations and other outcomes. Links to specific papers available on the websites of the meetings cited above provide background, context and recommended best practice.

2. RECOMMENDATIONS ON IMPROVEMENT OF RESPONSE RATES AND MINIMISATION OF RESPONDENT LOAD

The terms of reference for the task force involved the investigation of:

- which methods of data collection (e.g. mail, phone, fax, internet, e-mail) and follow-up routines are most effective for improving response rates and reducing response burden, also considering the impact of the different methods on the costs of conducting the survey;
- effective and cost-efficient methods for communicating with survey respondents to gain their cooperation in situations where the survey is either compulsory or non-compulsory;
- how to assess the impact (bias) that non-response can have on survey estimates and the development of methods to minimise that impact (e.g. imputation methods, estimation methodologies).

The work of the task force entailed a thorough review of current national practice and available literature in these areas. This literature suggests that a key factor in compiling high-quality opinion survey data is to achieve a satisfactory response rate, and that clear strategies to minimise non-response should be given high priority in the allocation of resources. The task force offered a comprehensive analysis of the relationship between response rate and methods for data collection. It investigated different data collection and communication methods, as well as factors influencing response rates.

The main outcomes of the work of the task force and the discussion at the second joint European Commission–OECD Workshop are embodied in the following seven recommendations, which entail the need for national institutes to:

1. Clearly specify in their metadata what kind of response rate is applied. The task force deemed that two kinds of non-response rates (or complementary response rates) seemed advisable according to survey design. In the case of non-response, these comprise a measure appropriate when there is a uniform sampling fraction and equal weights, and another appropriate in the more general case of unequal sampling fractions and reporting units¹³ with different weights. The former is given by the notation $NR1 = (n'/n)*100$ where n' is the number of units that did not submit useful information and n is the number of enterprises selected in the survey. The latter, and more general case of unequal sampling fraction and reporting units with different weights, is represented by the notation

$$NR3 = \frac{\sum_{i=1}^{n'} \frac{1}{f_i} * w_i}{\sum_{i=1}^n \frac{1}{f_i} * w_i} * 100, \text{ where } f_i = \frac{n'}{n} \text{ is the sampling fraction of the } i^{th} \text{ unit, and } w_i \text{ is}$$

the size of the weight of the i^{th} unit.

2. Formulate and implement a range of strategies for establishing initial contacts with respondents to gain their cooperation. Strategies include the tailoring of contacts to the characteristics of the survey unit¹⁴ (especially larger units), contacting the “appropriate” person within the unit, overcoming lack of awareness of the survey by explaining the benefits/uses of the survey data, making respondents more aware of the survey institution and its survey programme, using personal contact in the initial approach where possible, providing information on the survey characteristics explaining differences from other surveys, and ensuring that data requested are readily available to the respondent.
3. Adopt a respondent perspective with regard to the data collection methods, all of which have their strengths and weaknesses. Where possible, efforts should be made to allow survey units to choose the mode they prefer. Implement a mixed mode approach for data collection, which allows for the optimisation of data collection procedures and a reduction of total survey errors within the available time frame and budget.¹⁵

¹³ A reporting unit is a unit that supplies the data for a given survey instance.

¹⁴ A survey unit is a unit – typically a person or an enterprise – described in the list or register from which the sample is selected.

¹⁵ Examples of recommended practice in this area are provided in a study conducted by the Bank of Japan, “Why is the response rate of the TANKAN high?”, available at: <http://www.oecd.org/dataoecd/54/8/35564041.pdf>.

4. Periodically include questions in questionnaires to assess respondent preferences for data collection.
5. Develop efficient follow-up strategies that are tailored to the various modes of data collection used by an institute conducting BTS/COS. Such strategies include the provision of promotional material, use of toll-free telephone help lines to provide assistance to respondents, collecting only key variables as an alternative to total non-response, and providing an explicit indication that estimates (or proxy data) are acceptable for requested data items.
6. Review their current weighting methodology to ensure that business weights used in estimation are representative of the population. There is a need to take account of sampling probabilities in the weighting process. If aggregation to the branch or cell¹⁶ level combines businesses chosen with different probabilities (e.g. large and small businesses), the sampling fraction should be a factor in the weighting process, otherwise estimates will be biased.
7. Analyse the results from previous surveys to determine whether there is any evidence of different response behaviour for businesses that are more or less likely to respond to a particular survey cycle.¹⁷ All institutes reviewed by the task force use, at least to some extent, the missing at random (MAR) assumption for treating non-respondents in BTSs. This assumes that the average (weighted) distribution of answers from responding businesses is representative of non-respondents. If this assumption does not hold, then only taking into account answers from businesses responding to a particular monthly cycle of a survey can lead to a false conclusion regarding the change in the business climate, as this might only be due to a change in the structure of respondents.¹⁸

Further information on Recommendations 1-5 is available in the task force paper “Relationship between response rates and data collection methods”.¹⁹ Background information for Recommendations 6 and 7 is available in the paper “Assessing and minimising the impact of non-response on survey estimates”.²⁰

3. RECOMMENDATIONS ON HARMONISATION OF SURVEY OPERATIONS AND TECHNICAL DESIGN

There are at present no international guidelines or recommendations outlining best practice for the development of business tendency surveys. In 2003, the OECD published a Handbook²¹ aimed at assisting non-member countries in implementing and/or developing their BTSs. The survey procedures presented and recommended in the Handbook are those

¹⁶ A cell in this context is typically defined by one or two key variables, e.g. activity and size, with a predefined number of characteristics.

¹⁷ As undertaken by the South African Bureau of Economic Research and described in paragraph 23 of the task force paper “Assessing and minimising the impact of non-response on survey estimates”, available at <http://www.oecd.org/dataoecd/56/16/35634012.pdf>.

¹⁸ There are ways to overcome these problems. One example is to interpolate non-response from previous replies as is done with the constant-sample technique applied by INSEE (see http://ec.europa.eu/economy_finance/indicators/business_consumer_surveys/workshops/2005/ec_oecd_meeting/sl1p5_scherrer.pdf).

¹⁹ Available at <http://www.oecd.org/dataoecd/55/40/35558806.pdf>.

²⁰ Available at <http://www.oecd.org/dataoecd/56/16/35634012.pdf>.

²¹ Available at <http://www.oecd.org/dataoecd/29/61/31837055.pdf>.

used for official statistical surveys and served as a starting point for the task force when identifying key aspects in the development of standards for survey operation and technical design. The aspects covered by the task force comprised: efficient sample design and weighting methods, and identification and assessment of recommended practices for the design of internet surveys.

3.1. Efficient sample design and weighting methods²²

For business and consumer surveys, the task force sought to identify key issues in the areas of sample design and weighting methodologies. The objective was to draft an initial set of recommended minimum requirements and preferences, which aimed to improve the reliability and hence the overall quality of survey data. The key issues for efficient sample design, as presented by the task force, covered the identification of the relevant universe/reference population, identification of the sample frame, methods used for sample selection, and the treatment of missing data (except for consumer surveys).

As can be seen from the recommendations outlined below (separately for business tendency surveys and consumer opinion surveys), most are also relevant for quantitative surveys. Although many of the recommendations are self-evident, the benefits of their future inclusion in international recommendations are that they benchmark recommended practice and allow comparisons of data quality between countries.

3.1.1. Business tendency surveys

- Sample frame

1. Frame lists should include as exhaustive as possible an account of active firms in the survey universe of interest. In this context the use of official or statistical registers of active firms is recommended over that of more partial business or membership registers.
2. Institutes are advised to use cut-off strategies in order to stabilise the panel (size cut-off) and to precisely identify the survey objectives (branch cut-off).
3. Establishments²³ may be considered as the ideal choice for the sample unit, though it is recognised that it may be difficult to gather information at this level. Furthermore, other types of units may be more suitable depending on the focus or interest of the survey, e.g. KAUs²⁴ for studies on industrial structure or local units²⁵ for regional structures. Even if the firm is identified as the sample unit, it is advisable to have different reporting units within the firm where possible. It is strongly recommended that the same type of response units answer questionnaires each month.
4. Frame lists should be updated as soon as a new census of active firms is available.

²² The task force report “Efficient sample design and weighting methodologies: Analysis of key issues and recommendations” is available at <http://www.oecd.org/dataoecd/12/37/35493506.pdf>.

²³ An establishment is an enterprise, or part of an enterprise, that is situated in a single location, and in which only a single (non-ancillary) productive activity is carried out or in which the principal productive activity accounts for most of the value added.

²⁴ A kind-of-activity unit (KAU) is an enterprise, or a part of an enterprise, in which the principal productive activity accounts for most of the value added.

²⁵ A local unit is an enterprise, or part of an enterprise, which engages in productive activity at one location. A local unit may have more than one kind of economic activity.

- Sampling methods

5. The use of probabilistic sample-selection techniques are strongly recommended in preference to purposive or judgemental methods. The use of stratification-based sampling methods is recommended where there is heterogeneity in the unit population with respect to size or other characteristics. Use of exhaustive sampling is recommended for small countries or for a subset of the sample, e.g. in order to ensure that big companies are included in the sample.
6. A fixed panel should be used, established on a statistically sound basis using a rotating pattern of updating, with a fixed proportion of units being replaced at regular intervals.

- Treatment of missing data

7. Institutes should describe in their metadata the precise nature of the procedures used in the treatment of item non-response or missing data.
8. As a minimum requirement it is recommended that institutes closely monitor the impact of missing data (especially for large firms) and develop a clear set of strategies to minimise non-response.
9. The use of imputation methods for the treatment of remaining missing data should be considered with care, in order to avoid possible distortions.
10. Re-weighting techniques, taking account of different composition of the panel in adjacent surveys, are recommended as a means of reducing bias.

- Weighting methods

11. The use of weights is strongly recommended in order to improve the precision of the estimates. As a minimum, the use of a simple one-stage system of weights is recommended, though two-stage (or multistage) weighting procedures are recommended for heterogeneous populations, especially in large countries. A minimum requirement is that business weights used for units in the sample are approximately representative of the distribution of businesses (by size) in the population.

3.1.2. Consumer opinion surveys

- Sample frame

12. The frame list should include as exhaustive as possible an account of the adult population. As a result, official census or statistical registers are preferred to telephone registers. If the latter are used, appropriate methods to correct for possible coverage bias should be used.
13. Cut-off strategies with respect to age are advisable, though this may require further harmonisation within the EU.
14. Frame lists should be updated yearly.

- Sampling methods

15. It is strongly recommended that random sampling techniques be used to ensure survey representativeness.
16. In the case of heterogeneous populations, stratified sampling methods are preferred over simple random sampling.
17. Further research is recommended on the benefits of the use of a rotating sample design over the use of an independent sample selected each month.

- Weighting

18. Weighting is recommended in order to ensure better representativeness of the sample selected. Weightings could comprise demographic characteristics such as age and gender, region of residence and size of township, or socio-economic characteristics such as occupation, level of education, and type of area municipality.

3.2. Design of internet surveys²⁶

In recent years there has been an explosion in the use of the internet for data collection. While there is broad experience and knowledge of personal interviews and mail questionnaires, there is not yet a consensus among researchers involved in BTS/COS on how best to conduct internet surveys, and little attention has been given so far to their scientific underpinnings. Most researchers agree, however, that the internet environment has characteristics that make it distinct from other survey methods.

The aim of the task force was to contribute to higher research standards in the realm of business tendency surveys and to develop research-based design principles for internet questionnaires. The task force report commences with an overview of the characteristics, strengths and issues of concern for internet surveys. This overview, together with an extensive list of recommended practices, is based largely on the analytical reports, workshop documents, and other instruction material prepared by task force members and other researchers working on internet surveys in a wide range of countries.

Based on current knowledge and experience, the recommended practices outlined below are a starting point for further development of research-based principles for internet surveys.

- Getting started

- Ensure that the internet presence of the institution is professional, as participants will evaluate this on entry.
- Check whether potential participants who are contactable by e-mail have access to the internet, as in many businesses employees have restricted access to the Web.

²⁶ The task force report “Identification of recommended practices for the design of internet surveys” is available at <http://www.oecd.org/dataoecd/12/16/35493730.pdf>.

- Give respondents the chance to choose the mode of their preference, as it offers the possibility of “soft” control for computer skills.
- Ensure that IT support is available also beyond the end of the start-up phase, and that there is a helpline facility (phone number of the department or administrator).
- Assure data protection, data security, and confidentiality, and for ethical reasons do not acquire data without the knowledge of the respondent (for example cookies).
- Conduct a pilot study with volunteer firms and take into account their observations.

- E-mail invitation

- When using e-mail invitations, adhere to a widely accepted format (at present the plaintext format). HTML e-mails and attachments may be rejected on account of virus risks.
- Avoid using bought-in e-mail lists, as the data collection institute could be labelled as a spammer.
- Avoid spam-sounding words in the institute’s e-mail. It is also recommendable to avoid the use of “click here”, unsubscribe instructions and/or explanations of why the recipient is on the list.

- Designing the questionnaire

- Check the differences in the visual appearance of questions that result from different screen configurations, operating systems, browsers and screen displays.
- Introduce the Web questionnaire with a welcome and an attractive screen that is motivating and emphasises the ease of responding.
- Use a personal salutation at the beginning of the questionnaire to prevent computer-mediated communication with participants being perceived to be more anonymous than traditional communication.
- Present each question in a conventional format similar to that normally used on paper questionnaires with self-explanatory and intuitive instruments.
- Avoid the use of too many colours and design features that may distract respondents’ attention from the questions (one commonly used rule is to use three colours, taking colour blindness into account).
- Ensure that the font is big enough within different screen configurations.
- Do not sacrifice practicality for style, such as the use of extensive graphics, features and automated data checks, since browser incompatibility may result in a longer download time and accordingly in higher end user costs.
- Use sparingly drop-down boxes and other instruments that require several simultaneous mouse movements.

- Be aware that on-line readers read more quickly and impatiently. For questions known to be subject to mistakes, highlight important parts and include instructions that remind respondents to pay attention.
- Use a multi-page design merely for automatic skipping, conditional branching, or adaptive questionnaires. If using a multiple-page design, a progress indicator should be utilised showing respondents how close they are to the end.
- To avoid possible influence of the visual layout and question order on the responses, try to use the same layout and alignment of scales in the internet and the paper version of the questionnaire.
- Incorporate a reset option.
- Allow respondents to interrupt and re-enter the survey in case they are disturbed or wish to continue the answering process later.
- Make sure that the Web form is printable in case participants want to save a hard copy of their responses.

- Analysing the results

- Analyse whether there are differences in results across modes (item non-response, validity and reliability criteria) and systematically analyse the sources of these differences (questionnaire design, coverage, selection bias, etc.).
- Check whether sample characteristics of Web respondents are comparable to those of traditional paper respondents.

- Giving feedback

- If possible, create an intranet facility as a distinct member privilege, accessible by a unique password.
- Regularly gather feedback about user satisfaction from participants to identify the strengths and weaknesses of the institute's website.

- Security

- Create awareness among participants about the safe handling of their IDs and passwords. Instruct them not to share their access information with anyone except when they are assured that the request has been made by an authorised party.
- Provide a PIN for limiting access to the questionnaire only to the participant in the survey. If possible use an individualised link, so that respondents do not need to enter an ID and a password.

ANNEX 1: QUESTIONNAIRES

ANNEX A.1 THE JOINT HARMONISED EU INDUSTRY SURVEY

Monthly questions

- Q1** How has your production developed over the past 3 months? It has...
- + increased
 - = remained unchanged
 - decreased
- Q2** Do you consider your current overall order books to be...?
- + more than sufficient (above normal)
 - = sufficient (normal for the season)
 - not sufficient (below normal)
- Q3** Do you consider your current export order books to be...?
- + more than sufficient (above normal)
 - = sufficient (normal for the season)
 - not sufficient (below normal)
- Q4** Do you consider your current stock of finished products to be...?
- + too large (above normal)
 - = adequate (normal for the season)
 - too small (below normal)
- Q5** How do you expect your production to develop over the next 3 months? It will...
- + increase
 - = remain unchanged
 - decrease
- Q6** How do you expect your selling prices to change over the next 3 months?
They will...
- + increase
 - = remain unchanged
 - decrease

Q7 How do you expect your firm's total employment to change over the next 3 months?
It will...

- + increase
- = remain unchanged
- decrease

Quarterly questions (January, April, July and October)

Q8 What main factors are currently limiting your production?

- none
- insufficient demand
- shortage of labour force
- shortage of material and/or equipment
- financial constraints
- other factors

Q9 Considering your current order books and the expected change in demand over the coming months, how do you assess your current production capacity?
The current production capacity is....

- + more than sufficient
- = sufficient
- not sufficient

Q10 How many months of production are assured by your current overall order books?
Our production is assured for □□.□ months

Q11 How have your orders developed over the past 3 months?
They have...

- + increased
- = remained unchanged
- decreased

Q12 How do you expect your export orders to develop over the next 3 months?
They will...

- + - increase
- = - remain unchanged
- - decrease

Q13 At what capacity is your company currently operating (as a percentage of full capacity)?

The company is currently operating at □□.□ % of full capacity.

Q14 How has your competitive position on the domestic market developed over the past 3 months? It has...

- + improved
- = remained unchanged
- deteriorated

Q15 How has your competitive position on foreign markets inside the EU developed over the past 3 months? It has...

- + improved
- = remained unchanged
- deteriorated

Q16 How has your competitive position on foreign markets outside the EU developed over the past 3 months? It has...

- + improved
- = remained unchanged
- deteriorated

ANNEX A.3.2 THE JOINT HARMONISED EU SERVICES SURVEY

Monthly questions

Q1 How has your business situation developed over the past 3 months? It has...

- + improved
- = remained unchanged
- deteriorated

Q2 How has demand (turnover) for your company's services changed over the past 3 months? It has...

- + increased
- = remained unchanged
- decreased

Q3 How do you expect the demand (turnover) for your company's services to change over the next 3 months? It will...

- + increase
- = remain unchanged
- decrease

Q4 How has your firm's total employment changed over the past 3 months? It has...

- + increased
- = remained unchanged
- decreased

Q5 How do you expect your firm's total employment to change over the next 3 months? It will...

- + increase
- = remain unchanged
- decrease

Q6 How do you expect the prices you charge to change over the next 3 months? They will...

- + increase
- = remain unchanged
- decrease

Quarterly question (January, April, July and October)

Q7 What main factors are currently limiting your business?

- none
- insufficient demand
- shortage of labour force
- shortage of space and/or equipment
- financial constraints
- other factors

ANNEX A.3.3 THE JOINT HARMONISED EU CONSUMER SURVEY

Monthly questions

Q1 How has the financial situation of your household changed over the last 12 months? It has...

- ++ got a lot better
- + got a little better
- = stayed the same
- got a little worse
- got a lot worse
- N don't know.

Q2 How do you expect the financial position of your household to change over the next 12 months? It will...

- ++ get a lot better
- + get a little better
- = stay the same
- get a little worse
- get a lot worse
- N don't know.

Q3 How do you think the general economic situation in the country has changed over the past 12 months? It has...

- ++ got a lot better
- + got a little better
- = stayed the same
- got a little worse
- got a lot worse
- N don't know.

Q4 How do you expect the general economic situation in this country to develop over the next 12 months? It will...

- ++ get a lot better
- + get a little better
- = stay the same
- get a little worse
- get a lot worse
- N don't know.

Q5 How do you think that consumer prices have developed over the last 12 months? They have...

- ++ risen a lot
- + risen moderately
- = risen slightly
- stayed about the same
- fallen
- N don't know.

Q6 By comparison with the past 12 months, how do you expect that consumer prices will develop in the next 12 months? They will...

- ++ increase more rapidly
- + increase at the same rate
- = increase at a slower rate
- stay about the same
- fall
- N don't know.

Q7 How do you expect the number of people unemployed in this country to change over the next 12 months? The number will...

- ++ increase sharply
- + increase slightly
- = remain the same
- fall slightly
- fall sharply
- N don't know.

Q8 In view of the general economic situation, do you think that now it is the right moment for people to make major purchases such as furniture, electrical/electronic devices, etc.?

- ++ yes, it is the right moment now
- = it is neither the right moment nor the wrong moment
- no, it is not the right moment now
- N don't know.

Q9 Compared to the past 12 months, do you expect to spend more or less money on major purchases (furniture, electrical/electronic devices, etc.) over the next 12 months? I will spend...

- ++ much more
- + a little more
- = about the same
- a little less
- much less
- N don't know.

Q10 In view of the general economic situation, do you think that now is...?

- ++ a very good moment to save
- + a fairly good moment to save
- not a good moment to save
- a very bad moment to save
- N don't know.

Q11 Over the next 12 months, how likely is it that you save any money?

- ++ very likely
- + fairly likely
- not likely
- not at all likely
- N don't know.

Q12 Which of these statements best describes the current financial situation of your household?

- ++ we are saving a lot
- + we are saving a little
- = we are just managing to make ends meet on our income
- we are having to draw on our savings
- we are running into debt
- N don't know.

Quarterly questions (January, April, July and October)

Q13 How likely are you to buy a car over the next 12 months?

- ++ very likely
- + fairly likely
- not likely
- not at all likely
- N don't know.

Q14 Are you planning to buy or build a home over the next 12 months (to live in yourself, for a member of your family, as a holiday home, to let etc.)?

- ++ yes, definitely
- + possibly
- probably not
- no
- N don't know.

Q15 How likely are you to spend any large sums of money on home improvements or renovations over the next 12 months?

- ++ very likely
- + fairly likely
- not likely
- not at all likely
- N don't know.

ANNEX A.3.4 THE JOINT HARMONISED EU RETAIL TRADE SURVEY

Monthly questions

Q1 How has (have) your business activity (sales) developed over the past 3 months?
It has... (They have...)

- + improved (increased)
- = remained unchanged
- deteriorated (decreased)

Q2 Do you consider the volume of stock you currently hold to be...?

- + too large (above normal)
- = adequate (normal for the season)
- too small (below normal)

Q3 How do you expect your orders placed with suppliers to change over the next 3 months? They will...

- + increase
- = remain unchanged
- decrease

Q4 How do you expect your business activity (sales) to change over the next 3 months? It (They) will...

- + improve (increase)
- = remain unchanged
- deteriorate (decrease)

Q5 How do you expect your firm's total employment to change over the next 3 months? It will...

- + increase
- = remain unchanged
- decrease

Q6 How do you expect the prices you charge to change over the next 3 months? They will...

- + increase
- = remain unchanged
- decrease

ANNEX A.3.5 THE JOINT HARMONISED EU CONSTRUCTION SURVEY

Monthly questions

Q1 How has your building activity developed over the past 3 months? It has...

- + increased
- = remain unchanged
- decreased

Q2 What main factors are currently limiting your building activity?

- none
- insufficient demand
- weather conditions
- shortage of labour force
- shortage of material and/or equipment
- financial constraints
- other factors

Q3 Do you consider your current overall order books to be...?

- + more than sufficient (above normal)
- = sufficient (normal for the season)
- not sufficient (below normal)

Q4 How do you expect your firm's total employment to change over the next 3 months? It will...

- + increase

- = remain unchanged
- decrease

Q5 How do you expect the prices you charge to change over the next 3 months?
They will...

- + increase
- = remain unchanged
- decrease

Quarterly question (January, April, July and October)

Q6 Assuming normal working hours, about how many months' work is accounted for by the work in hand and the work already contracted for?

Number of months: □□.□

ANNEX A.3.6 THE JOINT HARMONISED EU INVESTMENT SURVEY

March/April survey

Investment plans:

Q1 State percentage change in investment last year (t-1) on investment two years ago (t-2):
□□□.□ %

Q2 State percentage change in investment this year (t) on investment last year (t-1):
□□□.□ %

October/November survey

Investment plans:

Q1 State percentage change in investment this year (t) on investment last year (t-1):
□□□.□ %

Q2 State percentage change in investment next year (t+1) on investment this year (t):
□□□.□ %

Structure of the investment:

Investment carried out this year and planned investment for next year is, or will be, of the following kind (choose the appropriate category or categories):

- Replacement of worn-out plant or equipment
- Extension of production capacity

- Investment designed to streamline production
- Other investment objectives (pollution control, safety, etc.)

Factors influencing investment: for this year (t) and next year (t + 1)

- **Demand**

This heading covers the capacity utilisation rate and sales prospects. The degree of certainty as to how these variables will change is likely to be as relevant as the change itself.

- ++ very stimulating
- + stimulating
- = no influence
- limiting
- very limiting
- N no answer

- **Financial resources or expected profits**

This heading covers the availability of resources for investment (and their cost) together with the return on investment and the lack of opportunities for the company to use its resources more profitably than by investment (notably by purely financial operations).

- ++ very stimulating
- + stimulating
- = no influence
- limiting
- very limiting
- N no answer

- **Technical factors**

The main ones are technological developments, the availability of labour and its attitude towards the new technologies, and the technical conditions set by the public authorities before they grant the investment permit.

- ++ very stimulating
- + stimulating
- = no influence
- limiting
- very limiting
- N no answer

- **Other factors**

This may include the policy of the public authorities, notably with regard to taxation, and whether or not production can be transferred abroad.

- ++ very stimulating

+ stimulating
= no influence
- limiting
-- very limiting
N no answer