Chapter 4: Sentiment indicators

Contents

4.1 Introduction

A sentiment indicator is in this report broadly defined as any indicator that reflects data based on qualitative assessments on expectations and evaluations, and which containing an element of sentiments or subjectivity. Sales expectations of company managers, current financial situation evaluation of consumers or overall life satisfaction of an individual are examples of sentiment indicators.

Obtained through household or business sample surveys, sentiment indicators rely on the perception or expectation of individuals. These respondents might be household members or company managers. Indicators calculated from the results of economic tendency surveys are generally called confidence indicators though the term sentiment indicator is used as a generic term for the non-composite indicators treated in this chapter. From the result of these surveys composite sentiment indicators are also constructed to show prevailing sentiments about a certain topic, such as the market, current business environment or personal well-being.

Quantitative data reflecting the perception of individuals might also be considered as sentiment data in some views. For instance retail sales collected via credit card transactions might reflect the consumers' confidence in the current economy. Nonetheless this kind of data is not in the scope of this handbook. And in this chapter the term "sentiment" refers to the qualitative perception of individuals.

Primarily basic sentiment indicators will be focused on in this chapter, leaving composite economic sentiment indicators e.g. Economic Sentiment Indicator (ESI) to Chapter 5 and composite socio-economic sentiment indicators e.g. well-being indices to Chapter 6.

Sentiment indicators are handled in two subdivisions in this chapter. Section 4.2 defines *economic sentiment* indicators, and describes the two most frequent surveys which produce this type of indicator, namely Business Tendency Survey (BTS) and Consumer Tendency Survey (CTS). Also in this

section is a described analysis with comparison to reference series and determination if the indicator is leading, coincident or lagging. In section 4.3 *socio-economic sentiment* indicators are defined and described.

Section 4.4 brings recommendations for dissemination of the sentiment indicators and section 4.5 discusses issues about international comparability. Final Section 4.6 summarise a list of references.

4.2 Economic sentiment indicator

4.2.1 Definition, background and examples

Economic tendency surveys are the main data sources for economic sentiment indicators providing essential information for economic surveillance, short-term forecasting and economic research. There are two prominent kinds of economic tendency surveys; *business* tendency surveys and *consumer* tendency surveys.

Business situation evaluation, demand-turnover expectation and sale price expectation are the examples for economic sentiment indicators based on business tendency surveys while general economic situation expectation, statement on current financial situation of household, assessment on spending money on semi-durable goods and probability of buying a car might be cited as examples on economic sentiment indicators based on consumer tendency surveys.

Tendency surveys provide timely qualitative data thanks to pre-coded simple questionnaires. The type of the information collected allows for using data without doing advanced calculations, consistency checks within data or even cross-checks with external sources. Actually these are the main characteristics of economic sentiment indicators.

Historical development of economic tendency surveys might be summarized as follows; in 1920s trade associations in England and Germany started conducting tendency surveys and in 1950s NSOs, research institutions and central banks of countries like France, Germany, Italy, etc. followed them. Centre for International Research on Economic Tendency Surveys (CIRET) was also founded in this decade. CIRET is a forum for leading economists and institutions concerned with analysing and predicting the development of the business cycle and the economic and socio-political consequences. In 1960s European Commission launched the Joint Harmonised EU Programme of Business and Consumer Surveys, in 1990s OECD started a program on business tendency surveys and lastly in 2010s, it could be said that importance of economic tendency surveys was acknowledged at international level. Economic Sentiment indicators from business and consumer tendency surveys are included in the data template for short term statistics that was established as part of the international programme on short-term economic statistics endorsed by the United Nations Statistical Commission in 2011. See forthcoming Handbook on data template and metadata for short-term statistics. The data template include a set of indicators that are internationally recognized as important for macroeconomic surveillance, early warning of economic and financial vulnerabilities and detection of turning points in business cycles.

The European Commission's Directorate General for Economic and Financial Affairs (DG ECFIN) is the EU partner which in collaboration with NSO's, research institutions, central banks and also private statistical institutes conducts the Business and Consumer Tendency Surveys. At their homepage methodological guidelines and other documents are found with recommendations for conducting

the surveys. The EC DG ECFIN *Methodological User Guide* provides the basics of the surveys including common properties, sampling, aggregation and weighting, seasonal adjustment and calculation of balances. In the guidelines are also listed the questions asked within the monthly/quarterly Industry survey, construction survey, services survey and retail trade survey, as well as within the monthly consumer survey and the biannual Industry Investment survey.

The publication *List of 'best practice' for the conduct of business and consumer surveys* complements the above guideline with recommendations for best practices. Here sampling frame, sampling size, sampling methods, weighting procedures, seasonal adjustments and measures to increase response rates are reviewed.

Also to be mentioned is Special report No 5 / 2006. European Economy: *The Joint Harmonised EU Programme of Business and Consumer Surveys* which provides a) A user manual to the Joint Harmonised EU Programme of Business and Consumer Surveys b) International guidelines and recommendations on the conduct of business and consumer surveys and c) Studies related to the EU BCS programme.

A United Nations publication "Handbook on Economic Tendency Surveys" aims to provide best practices and harmonized principles on these aspects of tendency surveys; sample selection, questionnaire design, survey questions, survey execution, data processing and the use of composite tendency indicators.

Finally it is worth to mention the OECD *Business Tendency Surveys - A Handbook*. (OECD, 2003). Also here recommendations on questionnaire design, sample selection, uncertainties, and result processing is to be found.

The pros and cons

The advantage of using tendency survey results is that they are available much faster than the release of related quantitative measures covering the same types of economic activity. Therefore, they are considered as complementary to the official statistics. Tendency surveys are either conducted by NSOs, research institutions, central banks or private companies. The result of surveys might also be considered as official statistics if they are in line with code of practice of the statistical authority in the country.

The rapidity of tendency surveys stems from their short and easy questionnaire and fast data processing procedures. Qualitative surveys do not require numerical evaluation and allow economic agents to assess past, present and expected developments in variables of interest by few predetermined replies, like: “increase”,” unchanged”, “decrease”. Distribution of values behind these answers is left to the subjective opinion of each interviewed firm’s manager and remains unknown. Little choice of answers and the possibility to rank them from pessimistic to optimistic make the respondent feel more confidence to evaluate and greatly reduce time of data collection.

Economic sentiment indicators obtained through tendency surveys are primarily designed to signal changes in economic activity and widely used in macroeconomic assessments and forecasts. For instance the specific usage of a business sentiment indicator is detecting turning points in the economic cycle. These indicators are used to help both the government and the private sector decision-makers to check their performance and plan their actions. Therefore countries have begun to improve their indicator system by including indicators from tendency surveys.

Central Banks are the main users of economic sentiment indicators among other user groups like international organizations, trade organizations, research institutes, the press and other media. For instance in terms of monetary policy decision making, reliable and timely information on the inflationary pressure generated by economic demand is of key importance for Central Banks. Especially in inflation targeting regimes, monetary policies based on demand management require acceptable knowledge and accurate forecasts of the business conditions, in particular slowdowns and expansions in economic activity. Similarly economic data of the business sector (such as indices of industrial production and revenue) based on short-term business surveys are monitored by central banks and policymakers in setting fiscal policies.

National Statistical Offices can take the advantage of their recognition, reliability, experience, infrastructure and human resource in conducting tendency surveys. These advantages make it possible to conduct the study in a better way in terms of using proper sampling techniques, data processing procedures, well trained interviewers and selecting appropriate weighting, calibration and correction techniques. Moreover communication and collaboration of NSOs with international and national bodies give them the opportunity of following latest developments and detecting needs and integrating this information to the study.

On the other hand, the disadvantage of producing economic sentiment indicators by NSOs might be related to their subjective feature. As explained above the results of tendency surveys that are economic sentiment indicators, are used as leading indicators to track changes in economy, measured by other indicators also produced by NSOs. However the performance of leading indicators is not always perfect, and inconsistency between sentiment and reference indicator might disqualify the sentiment indicators at a first glance. Therefore the NSOs are advised to carefully explain that this is not necessarily real inconsistencies since economic sentiment indicators reflect the perception or expectation of individuals, which inherently are affected by impressions of the surrounding business and political climate.

Overall, the economic sentiment indicators show zig-zag fluctuations from month to month, because of measurement errors and the element of subjectivity by respondents and also because of the calculation method of the main indicator value, the balance which exclude a greater amount of answers (see paragraph on Balances in next section 4.2.2)

Therefore it is not rare to see a drop in the indicator in a single month or quarter, though the trend is up-going. Such monthly or quarterly fluctuations in the sentiment indicators can be modified in the graphic presentation by a smoothed curve indicating the “trend” of the business cycle. By smoothing data there is always a trade-off between robustness and early detection of turning points. Therefore such a smoothed curve should always be analysed and presented in conjunction with the non-smoothed curve.

The field application period in Euro area is the first half of the month as it is one of the features of DG ECFIN methodology. It could be criticized that the resulting sentiment indicators are not representing the whole month. The disadvantage of extending the field application to the whole month is first having the results in the coming month which might be late for a leading indicator. Therefore NSOs who intend to conduct tendency surveys should decide about this trade off.

Lastly, random measurement errors resulting from the interviewer or respondent should be mentioned. As indicated above, the replies might be sensitive to the moods of the persons and the

structure of the wordings, also recent headlines in the news media may bias the result. Training of interviewers in terms of specific features of the survey might minimize the problem.

4.2.2 Compiling business tendency surveys

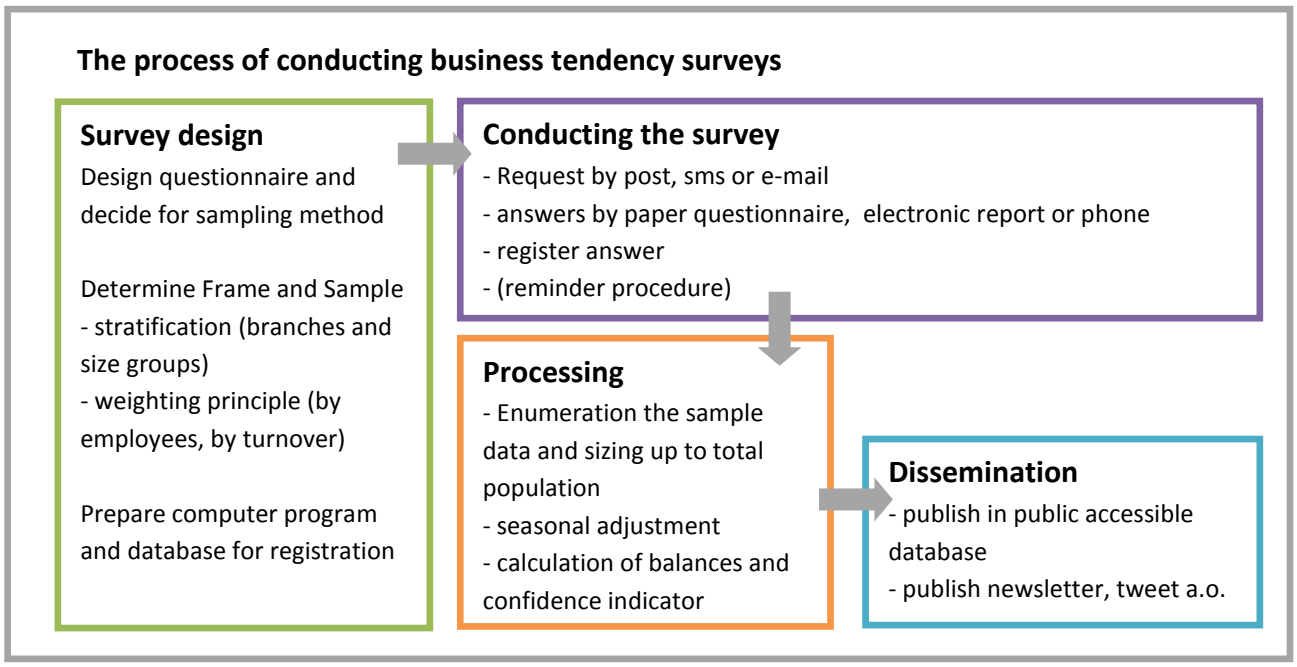
Business Tendency Surveys (BTS) are carried out in many countries in various shapes around the world and leads to economic sentiment indicators – also named confidence indicators. An example, which should be the main reference in the following, is the EC Business Tendency Surveys which are part of the Joint Harmonized EU Programme of Business and Consumer Surveys. The monthly surveys are divided into Industry (manufacturing), the Construction (building), the Retail Trade and the Services. Moreover a biannual investment survey within the Industry is carried out. Often the monthly questionnaire is expanded with additional questions each quarter.

The participation in business tendency surveys is mostly voluntary but compulsory in some countries, and the quality of the results depends on the willingness of enterprises to participate. To what extend the compulsive surveys are actually enforced it not known. Hesitations towards compulsory survey especially regarding tendency surveys are that it could reduce the quality of the answers which includes assessment on future expectations, and also slow down the field work period because of reminding procedures.

The responding unit should be the manager of the enterprise in business tendency surveys while accountants are generally responsible for filling in quantitative surveys. This is related to the quality of the survey since the managers are supposed to have the overall information on the current situation of the company and the sector.

The enterprises included in the survey should be convinced that the information they provide is not only an important input for macro-economic analysis (policy making) by trade associations, the financial sector and the governmental administration, but also valuable information that can be used by the enterprises more directly e.g. in market research.

The flow chart below depicts the main steps of compilation procedure, from survey design, over conductions and data processing and finally dissemination.



The survey can either be conducted as a random sample or as a panel sample, which in the latter case implies that the same companies recurrent month after month are receiving request on participation. Because of drop outs the panel sample has to be supplemented either monthly or within bigger intervals.

In sample design, division of economic activity is used for the stratification. Also stratification into groups of company size is common. Please refer to e.g. DG ECFIN Methodological User Guide about sample design.

The coverage of economic activities within each sector (services, manufacturing etc.) is determined by taking into account some factors. Mostly market oriented economic activities which are sensitive to cyclical movements of the economy are covered in the survey. Contribution to GDP is also taken into account for this purpose. Especially the coverage of services sector are said to be country specific. In Denmark for example, public and semi- public institutions are included in the survey, since they have some commercial activities besides public funding; this is not the case in other countries. In general the definition of the economic activities should be according to the UNSD classification system ISIC or the EU classification system NACE, to ensure international comparability. Also, when selecting the economic activities within a survey one could also ensure the indicator targets the same coverage as the reference series. Within the EU Business and Consumer Surveys the exact economic activity coverage is defined according to Methodological User Guide**.**

As referred to in 4.2.1, various guidelines, recommendations and handbooks exist from the EU, OECD and UN. In the following shall be touched upon characteristic issues of the business tendency surveys, namely phrasing of questions, actual field application, weighting, imputation, balances and confidence indicators.

Phrasing of questions and answers

Questions are asked about business situation, turnover, sales, employment, sales prices, stock and order. In the harmonized EU BTs the horizon over which the questions targets are the past 3 month and the next 3 month, while other NSOs and private institutes sentiment surveys the horizon could be only one month.

The core part of the questions targets to assess development over the past three months and expected development over the next three months.

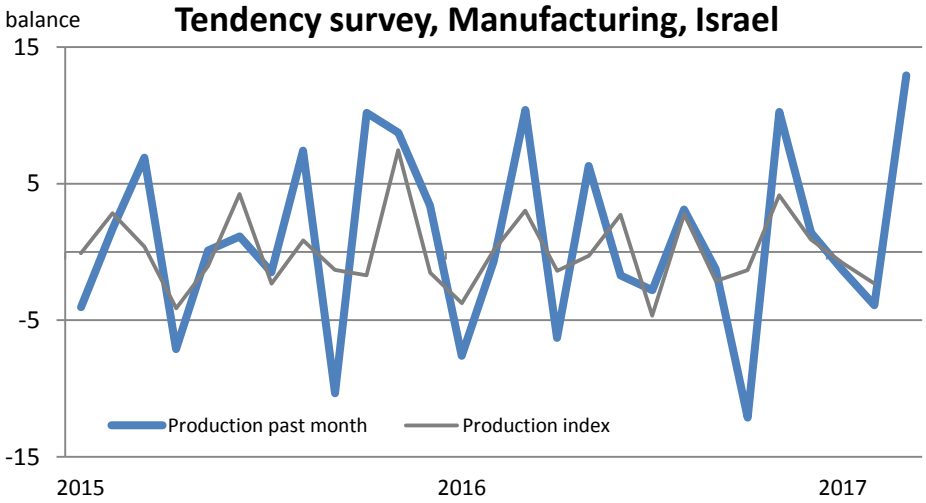
A question in the EU BTS is “How do you expect your production to develop over the next 3 months? It will…” Answering options are ordinal of the Likert scale type (see textbox p. 14) either *increase*, *remain unchanged* or *decrease*. In general, in the EU BTS there are only three answering options. If finer nuance is needed, answering options can be expanded to five: *strong increase*, *increase*, *unchanged, decrease* or *strong decrease.* Questions about current status like stock of finished products is assessed in similar qualitative way: *too high, adequate,* or *too low.* Other questions in the questionnaire are just checked or not checked, e.g. questions about whether there company sees factors limiting the production.

Following DG ECFIN Guidelines, some questions can be assessed more or less value-laden. For example the question on current overall order books can be assessed by *more than sufficient, sufficient,* or *not sufficient.* However a more neutral phrasing of the assessment options is also offered*: above normal, normal for the season,* or *below normal.* When implementing the survey in the NSO it is recommended to careful consider *pro et cons*. Most important is to stick to the choice over time from survey to survey. Changes may lead to data break in a time series.

Questions on activity may also call two different answers. Depending on the formulation, whether it targets turnover or output, it can result in assessment on value or volume of activity.

Example. Business Tendency Survey, Manufacturing, Statistics Israel (2017)

The Israeli BTS survey is conducted according to an individual adjusted methodology different to the EU harmonized methodology. Among 14.000 manufacturing companies in Israel within the ISIC groups 6-33, there are 7.500 companies after cutting off companies with below 5 employees. For the panel sample frame is selected 400 companies. The sample is stratifies into the above mentioned ISIC groups for economic activities, and the sample is also stratified into five size groups: 5-10; 10-49; 50-100; 100-250 and above 250 employees.



The requests for the monthly survey are either send by email or fax. The questionnaires are sent in the beginning of the month and the sample is randomly divided in 4 weeks of collection.

In then questionnaire is first asked one question about the current business situation of the firm and thereafter is posed 7 questions about the past development in the previews month regarding order books, output, sales, finished goods inventories and employment.

The third part of the questionnaire is about the expectation for the next month. Furthermore is asked about the expected inflation rate and about the expected foreign exchange rate. Those questions targets the next 3 month and the next year.

A statistical test of net balances revealed that the net balance of the past sales anticipate the Production index (IOP) change and forecast the direction of the IOP change with a probability more than 85% (in logistic regression when the IOP change is transferred to binary values). Therefore the media release focus in this result in the chapter of Manufacturing.

An overall confidence indicator is produced by composite all the net balances of the five sectors in the BTS survey (Manufacturing, Construction, Trade , Hoteling, Service) weighting by their employment.

As compared to the Harmonized EU-methodology the Israeli BTS only ask about past and next one month in the contrary to 3 month. Also the field application period over 4 weeks is different to the Harmonized EU –practice. Please refer to the Annex-example on the “Israel experience with BTS”.

In the DG ECFIN's list of best practices is mentioned especially for the EU-partners that the harmonization of the wordings of the questions is important for the comparability. This is of course not a demand for non-EU countries, however it can be considered to follow the wordings, if nothing else speaks against it, to ensure international comparability.

Field application of the survey

Generally BTS are conducted via web-forms to fill inn or via paper questionnaires send by post. However also reporting by fax, telephone interviewing or computer assisted face-to-face interviewing is used for data collection in some countries. For monthly surveys the field application period is usually the first half of the month. Within the EU partnership the surveys are carried out the first two-three weeks of the month. Data dissemination and possible newsletters are published by the end of the same month as the survey month.

Other countries may have extended data collection periods and publication at the beginning of next month.

The horizon over which respondents are asked to reason may differ from one country to another. In the European program of business and consumer surveys, businesses and consumers are asked to reason over the past or next three months including the survey month. According to the guidelines they evaluate the changes *over* the three month period, from the beginning to the end, so to say.

As a reminiscent from only quarterly surveys, some countries, including EU countries, ask the respondent to assess the past three month as compared to the previous three non-overlapping months. Of course some countries might deliberately have settled for posing the question like this. Others may operate with a shorter or longer time horizon than three month.

Within the EC tendency surveys, respondents are asked to look away from seasonal effects, when assessing the changes. For some businesses especially in the retail sector this might be difficult, and a pragmatic solution can be to ask the companies to compare the three month period to the same period a year ago.

Size weights and sample weights

In a typical business tendency sample companies in the sample are *weighted by their size*, measured e.g. by number of employees or by turnover. This due to the fact that a positive or negative development in a big company is more important for the business and society economy than in a small company – and this is not reflected directly in the figures as in a quantitative survey.

It is also typical to stratify into size groups, where the probability of being chosen is much higher for big companies than for small companies. This helps to minimize the size of the sample, since the sample coverage measured by e.g. employees becomes bigger when compared to the entire population.

The enumeration process is the transformation of the sample results to cover the entire population within same economic activity/activities. In the enumeration process strata with small companies will have a higher weight (*sample weight*) than big companies, since their weight is determined by the inverse of the probability of being chosen. In other words, a small company represents many other small companies which are not in the sample, while a big company only represents itself, since all other big companies (in principle) is chosen for the sample. S*ize weights* will have a tendency counteracting and cancelling out the effect of *sample weights*, however not entirely, since it has to

be borne in mind that the size weights are assigned at the individual company level, while the sample weights are assigned at the stratum level.

In general, number of employees is a good proxy for company size, however turnover, production or income may be more accurate, and especially considering the current post-industrial internet era, there may be larger and larger differences on turnover per employee between companies, leading to biases within and among branches. Whichever method is settled upon it is recommended that the same method is used throughout for all indicators in the survey in order to maintain the comparability.

Imputation of missing replies

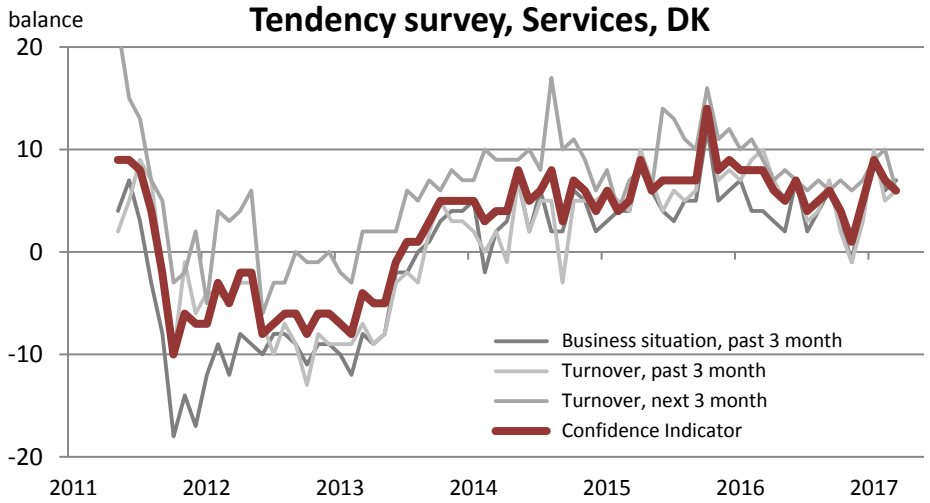
The DG ECFIN writes in list of best practices that the use of imputation methods for the treatment of remaining missing data should be considered with care, in order to avoid possible distortions. The problems about imputing data from previous month's surveys is that the survey is qualitative not quantitative. The answers a company reported last month were not exact figures e.g. for turnover, it were an assessment on development over some specific month, an assessment that may be very different next month. The recommendation is thus taking use of indirect imputation in the enumeration process. This is simply done by assuming that the non-responding companies would have answered like the answering companies within the stratum.

Seasonal adjustment

In some surveys, among others the EU harmonized surveys, the respondent is asked to look away from seasonal effects when evaluating the past, present and future. Still the balances may show seasonal patterns, which it is recommended to adjust for, in order to evaluate the development from month to the succeeding month, instead of from month one year to same month another year. Please refer to various already mentioned handbooks from OECD, UN and DG ECFIN. Eurostat has developed the JDEMETRA+ application which is able to establish advanced corrections models taking specific national holidays and national trading days into account.

Example. EU harmonized Business Tendency Survey, Services

The Danish Statistics' BTS surveys are part of the EU harmonized programme. Among 61.000 services companies in Denmark within the NACE groups 49 – 96, there are 12.300 companies after cutting off companies with below 10 employees. For the panel sample frame is selected 2.950 companies. The sample is stratifies into the above mentioned NACE groups for economic activities (except some few of minor importance), and the sample is also stratified into three size groups: 10-19; 20-49 and above 50 employees.



The survey is monthly, and requests are either send by email or post. Those receiving email request logs into the national online reporting system VIRK to fill an electronic form. Some prefer paper questionnaire, which is still an option, though to be phased out, due to costs of postage and handling. During 2017 a web formula will be launched, which is easier to access than the existing VIRK-system that requires log-in and password.

Including a reminder procedure, activated about the 12th in the month, the survey data is entered the database by the 21th in the survey month, from where data is enumerated to the entire population, and the *balances* for each indicator are calculated.

In then questionnaire is first asked eight questions about the development over the past three month and the expected development over the next three month, including the survey month, regarding Business Situation, Turnover, Employment and Sales prices.

Furthermore is asked if the company could increase the volume of activity with present resources if demand increased; And if so, with how many percentages. Finally is asked about production limiting factors. Here the respondent can check one or more options among those: none; insufficient demand; shortage of labor force; shortage of space and/or equipment; financial constraints; other factors.

From three of the indicators (past months turnover and business situation; and coming months turnover) is calculated the *Confidence indicator* of the Services by simple average, which is perceived as a key leading indicator for the Services tendency.

Balances

Increasing, decreasing or unchanged? Below normal, normal or above normal? Those are some of the responses businesses or households are expected to provide each month or quarter to questions on their past or expected situation.

In the compiling procedure, for each indicator the weighted number of answers is distributed on the three or five answer options in percentages summing to 100 pct. If e.g. 15 pct. for increase, 48 pct. for unchanged and 37 pct. for decrease, the balance (or *net-balance*) is the result of subtracting positive assessment from negative assessment, that is 15 minus 37 resulting in the net value minus 22, denominated the balance. The balance at minus 22 is better indicated without the "pct." specification in order not to confuse. However, the balance can e.g. be worded as follows: "An overweight at 22 percentages of the companies, weighted by size, within the sector expects the production to decrease over the next three month".

It is noted that answer for neutral (unchanged, normal, sufficient etc.) is excluded from the balance calculation. Apparently it is assumed that if asked to choose side, then members of the group would split even to each side, thus leaving the balance unchanged. This is a, since the neutral group is often quite large, sometimes up to 70 pct. or 80 pct. or above, and it could easily be biased if asked to choose side. Some NSOs like the Israeli Central Bureau of Statistics has chosen to expand the set of answer options to five of this type: *strong increase, increase, unchanged, decrease or strong decrease*, to bring down the neutral mid group. When calculating the balance the *strong* increase/decrease count with their full percentages, while increase/decrease only counts with half their percentages. For deepening please refer to the subsection Balance and confidence indicator under section 4.2.3

Confidence indicator

In order to reflect overall perceptions and expectations at the individual sector level in a one-dimensional index, confidence indicators are calculated. They are composed by simple average of two or three basic indicators and prove to correlate with a suitable reference series. The confidence indicator is the typical indicator summarizing the monthly results of the tendency survey in one figure. For instance the confidence indicator for services (see figure), within the EU BTS, consists of the simple average of the following balance indicators;

- business situation (over the past 3 months)
- demand / turnover (over the past 3 months)
- demand / turnover (next 3 months)

Usage of the term confidence indicator differs. Sometimes the above mentioned indicator is specified as "composite confidence indicator". This in contrast to single indicators which are nominated to serve as confidence indicator, which according to OECD (2003) for example could be an indicator based on the question about business situation.

4.2.3 Compiling consumer tendency surveys

Consumer tendency surveys are household surveys aiming to measure present situation assessments and future period expectations of consumers' on personal financial standing and general economic course. Besides having views on the economic situation in the country and on

personal and household financial situations, the survey also provides a quick, qualitative information on consumers plans to purchase durable goods and expectations concerning inflation and savings. Outcomes of surveys often have the media's awareness and widely used in economic analysis by researchers and policy makers.

In the following, the compilation of the consumer tendency survey is briefly explained. More detailed descriptions and considerations is to be found in previous sections about business tendency survey.

Consumer tendency surveys are mostly monthly surveys conducted by NSO's, central banks, universities or private agencies. The Conference Board's consumer confidence index or consumer sentiment indicator of University of Michigan are examples for USA, while central bank of India is carrying out the CTS in India. European Commission Director General Economic and Financial Affairs (DG ECFIN) coordinates business and consumer tendency surveys for EU member and candidate countries.

DG ECFIN collects and publishes data through joint projects implied by the related institution conducting the survey in the country. The Methodological User Guide to the "Joint Harmonised European Union Programme of Business and Consumer Surveys" is a good theoretical base covering all aspects and methodologies of both surveys.

Scope

The target population of a consumer tendency survey is the adult population of the country. The representative individuals are selected directly or from a selected household on the basis of socio-economic and demographic characteristics.

The sampling method, categories of weighting for sampling and survey method are determined by financial restrictions of the organization. Every month, nationally

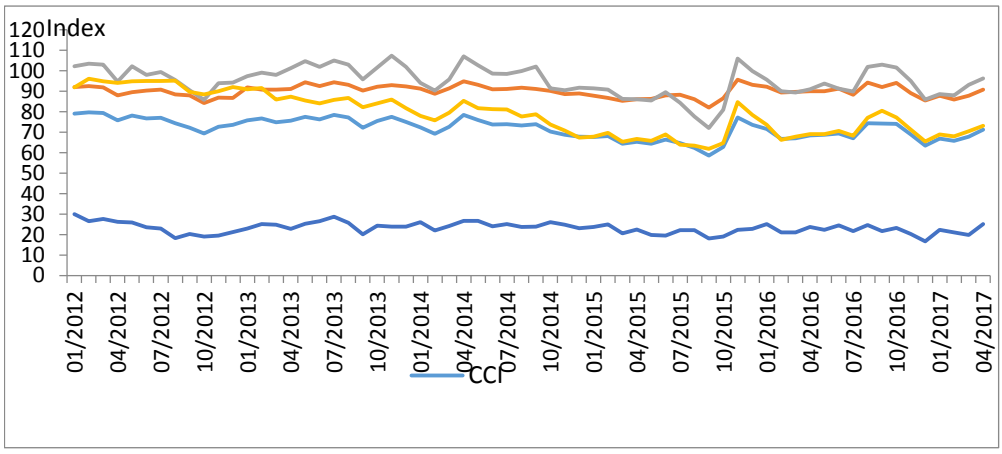
Example. Consumer Tendency Survey in Turkey

Consumer Tendency Survey of Turkey is carried out as a monthly survey in cooperation with the Turkish Statistical Institute and Central Bank of the Republic of Turkey. The survey was carried out as a module to the Household Labor Force Survey, 2004 – 2012, and was not in line with the EU program in terms of questionnaire, application period and dissemination. An independent survey harmonized with EU Programme of Business and Consumer Surveys was designed and started in 2012. Both modular and independent surveys were conducted simultaneously in 2012 with different samples. This dual application allowed TurkStat to make comparisons and pilot the new study, which moreover was used to construct a back casting model for estimation of series back to 2004. The new questionnaire includes the total of 18 tendency questions, of which 15 are translated from the harmonized EU-programme and 3 relates to country level needs.

An individual at the age of 16 or above who lives in the sample household is surveyed. The sample size is about 4900 households and the individual is selected randomly by the data entry programme.

The fieldwork period of the survey is the first two weeks of each month. Household letters and brochures are sent to households for informing beforehand by post. The survey is carried out in 26 Regional Offices of TurkStat using Computer Assisted Personal Interview (CAPI) method.

Graph: CCI and sub-indices, 2012-2017



Following very fast data processing, weighting and calculation processes, the survey results are published on the third week of the month. The publication day is determined according to calendar of DG ECFIN during the construction of annual work plan. Data is also sent to DG ECFIN in the required format in the same day of publication. Survey results covers both Consumer Confidence Index (CCI, see graph) calculated as the arithmetic average of 4 sub indices and diffusion indices calculated for all of the 18 tendency questions. Diffusion indices are obtained by adding 100 to balance series to allow for an easier interpretation. Thus, the index is evaluated between 0 and 200 indicating an optimistic outlook for above 100 while indicating pessimistic outlook for below 100.

CCI indicates consumers' confidence concerning economic activity and is regarded as a leading indicator for private consumption expenditures.

representative sample households are interviewed selected by using an appropriate sampling framework.

Depending on mode of the survey, sampling frames might be central person register, census frame or population registers (register of all residents of country), telephone registers (fix telephone directory, official telephone directory, database of households phone number, public telephone registers, private database of randomly generated mobile and landline telephone numbers), address etc.

Categories of weighting or stratifies for stratified sampling method can be age, age group, gender, education, occupation, work regime, size of household, size of municipality, income of household (income classes or quartiles), region, geographical partitions or all categories of population etc.

Questionnaire of the survey consist of two main parts collecting information on household features and tendencies of the selected individual. Tendency part contains pre-coded questions generally using five level Likert scale. Reference period of the questions differ from last 12 months to next 12 months. DG ECFIN's harmonized questionnaire can be used as a base and if it is necessary some questions could be added the questionnaire for country specific cases.

Likert Scale is a technique for the measurement of attitudes. With this scale, respondents are asked to rate items on a level of agreement. Usually a 5 point scale is used which allows the individual to indicate his/hers opinion about a statement or question in a continuum.

For example: How has the financial situation of your household changed over the last 12 month? Answer options: got a lot better, a little better, stayed the same, a little worse, a lot worse (or don't know).

Also the 3 point answer options in business tendency surveys are to be perceived as a minimalistic Likert scale: Increase, unchanged, decrease.

Data collection mode

Consumer tendency surveys are generally implied by telephone (CATI -computer assisted telephone interview). Other modes could also be used in accordance with the condition of country like CAPI (computer-based, face-to-face interview method), CAWI (internet based questionnaire), PAPI (paper based personnel interview) or mix mode.

The fieldwork period of the survey is generally the first two weeks of each month. The survey results concerning the reference month are expected to be published at the end of the field application month or just after the completion of the month.

Balance and confidence indicator

A balance value is calculated by using the weighted responses to five level Likert questions ranging from extremely positive to extremely negative. The balance is calculated as the difference between the percentages of positive and negative responses, after following formula: B = (PP + ½P) − (½M + MM), which means the most positive, PP, and the most negative, MM, counts with their full percentage shares, while the moderate positive, P, and the moderate negative, M, counts with half their percentage share. Example given, if the percentage distribution between 5 answers on this question: How has the financial situation of your household changed over the last 12 month, is distributed like this: got a lot better (4 pct), a little better (11 pct), stayed the same (63 pct.), a little worse (15 pct), a lot worse (7 pct.), the balance is (4+ ½*11) – (½*15 + 7) = minus 5

The balance is calculated for each tendency question and resulting figure represent a possibility.

Within the EU Consumer survey balances and confidence indicators are presented on a scale ranging from minus 100 (pct.) to plus 100 (pct.), where those extremes are reached if all respondents either answers “a lot worse” or “a lot better” respectively. An indicator value at 0 indicates no change. As is the case with business tendency surveys balances are presented without unit, in order not to confuse the interpretation.

For reporting the survey results, balance statistics are used widely. However there are other ways of quantifying the results like diffusion indices. For instance Turkish Statistical Institute disseminates the consumer survey results converting balance values to a diffusion index. It is simply done by adding 100 to the balance values for the sake of easiness in interpretation of the resulting figure. Basically it implies shifting the above mentioned scale (– 100 to + 100) to 0 to 200. This means that the balance at minus 5 calculated above turns into 95. Thus the index value 100 indicates unchanged.

Within the EU consumer survey, the consumer *confidence indicator* is the arithmetic average of the balances (in percentage points) of the following four indicators:

- Financial situation expectation of household over the next 12 months
- General economic situation expectation over the next 12 months
- Number of people unemployed expectation over the next 12 months
- The probability of saving over the next 12 months

As in the case of business confidence series, consumer confidence series usually do not need revisions. Since perceptions and expectations of the individuals are measured in tendency surveys, revisions resulting from corrected past data are out of question. Similarly, rapidity of the survey results does not allow using late data. Tendency survey results are generally published and used within the data collection month, thus organization of field application is done to reach enough samples within the time interval of data collection.

4.2.4 Reference series analysis

In this section it shall be dealt with comparison to reference series and determination of whether a sentiment indicator is leading, coincident or lagging. In one hand it is important to validate the sentiment indicator up against reference data, to justify its value. On the other hand it is interesting to know whether the indicator is leading, coincident or lagging in comparison to the reference series. A leading indicator, which is the first indicator, to give notice about turning in the business economy, has a great value, for the entire business and financial sector analysts.

As mentioned before in this chapter a sentiment indicator should not necessarily compare fully to a reference series, since economic sentiment indicators reflect the perception of individuals, which inherently are affected by impressions of the surrounding business and political climate.

Leading or coincident

By design the various questions in the BTS are either leading or coincident. Questions about past three month development up till now are coincident. Questions about the next 3 month are leading. Questions about current situation are either coincident or leading; e.g. question on current overall order books in the construction sector is on the one hand coincident since it reflects current

situation, but since orders are to be carried out in the (near) future, the indicator can also be leading pointing at the future construction activity.

Therefore it is up to actual analyses to determine which actual characteristics a specific indicator has within a specific economy. This is done by comparing to suitable quantitative reference series.

The comparison between the BTS indicator and reference series may reveal two important issues about the BTS. First, it will reveal the predictability of the examined BTS indicator. Second, where there are differences between the two series, it may bring clues about the respondent's thoughts and assumptions when answering the question. For example it can be revealed to which degree the respondent disregard seasonal effects as asked to when answering.

Method to compare to reference series

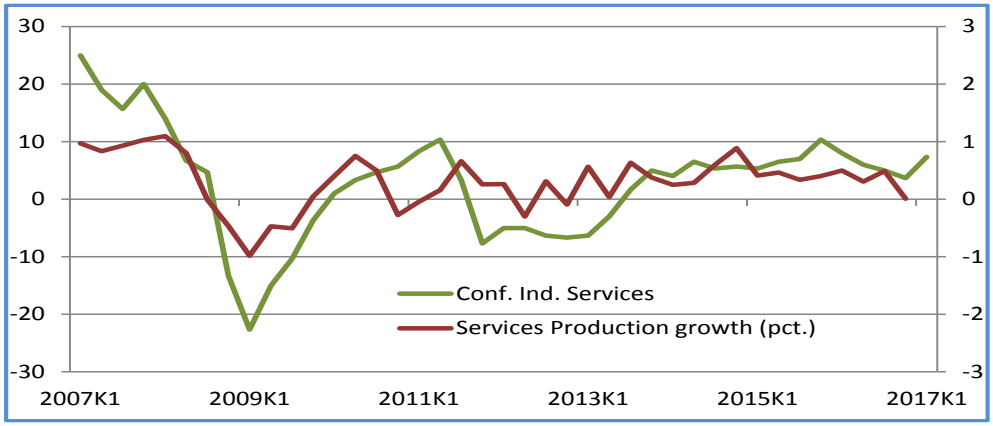
Most of the main indicators generated from the business tendency survey are expected to have a reference series they correlate well with. A reference series will typically describe same issue as the BTS indicator, however being published later than the rapid BTS-indicator, and being based on qualitative data survey or register data – sometimes referred to "hard data".

The evaluation of business survey series against quantitative statistical series is complicated by the fact that conventional statistical series focus on metric data, while business surveys use ordinal scales for most variables, e.g. a three point scale.

Example on comparing to reference series with either method A or B

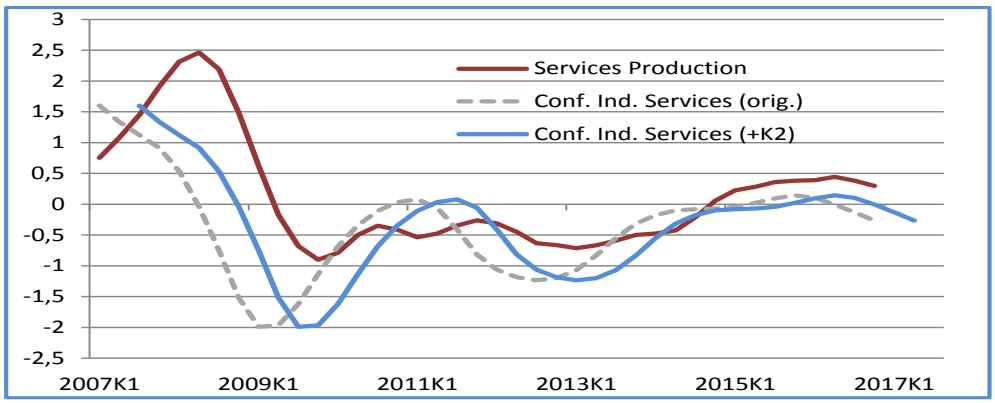
The figure below shows the Confidence indicator from the Services Survey for Statistics Denmark. It is compared to the Services Production growth from the National Accounts. This follows the comparison Method A mentioned in the text. The correlation is 0,80 and this is not getting better if shifting the SCI forward with one or more quarters. In other words the series is *coincident*.

Services Confidence vs. Services Production growth, Denmark



Below is the same data series as above compared to each other, but taking use of Method B.
With help of the Hodrick-Prescot filter is trend filtered from the Services Production (filter factor 1600), and also the irregular component is filtered (factor 4) from both series. Since the series in beforehand is seasonally adjusted, the remaining is the cyclic component of the reference series.

Services Confidence vs. Services Production growth, Denmark



The Confidence indicator has by definition no trend, and is seasonally adjusted. Irregular component if filtered (factor 4).

The grey series is the original SCI. It correlates with the reference series with 0,36. If the SCI is shifted forward one quarter the correlation coefficient gets 0,59 and if shifted forward another month (K2+) the correlation coefficient gets 0,72. This points at *leading* properties of the Services Confidence indicator, when comparing to the reference series via the method B. This is among others caused by the inherent phase shift there is between the two methods of preparing the reference series, either by calculating the growth rate or by de-trending the original series.

Two methods to compare between sentiment indicators and reference series are to mention.

Method A. Growth rate series reference: The mostly used method of comparison between BTS indicators and reference series is to compare to the growth rate of the reference series, which is to be perceived as trend free. If for example comparing the industry confidence indicator to the quantitative production output for the industry sector (derived from accountancy statistics), the monthly or quarterly growth rates are calculated. If only quarterly data on production output exists, one can either pick data from the mid-month in the four quarters in the BTS (February, May, August and November), or better creating quarterly averages of three months, to minimize effect of monthly fluctuations.

Method B. Cyclical series reference: Another method is to perceive the BST-indicator as the cyclic element in the traditional decomposition of an economic (E) time series E = T+C+S+I, where T is the trend, C the cycle, S the seasonal component and I is the irregular component. A reference series like the value added indicators, is described by the above formula, and in order to compare, the trend, the seasonally component and the irregular component should

be removed, so only the cyclical component is remaining. This is e.g. done by the Hodrick-Prescott filter, where the filter factor is determinant for where to split the time series in its four components. With right filter factor the T, S and I components can be removed, isolating the remaining C component. When the reference time series has got removed the trend and possible the seasonal component, one can compare the two time series, which both should be standardized.

In theory method B is to be used when the BST indicator is about current situation, e.g. order books, where the answer is of the type below normal, normal or above normal – since normal is to be interpreted as the trend, from which the business cycle deviates.

Thus the method A should be best suited for BTS indicators that indicate changes from one period to another corresponding to growth percentages in the reference series. As the country example shows, both methods are applicable, in one case nominate the BTS indicator as *coincident*, and in the other case nominating it a *leading* indicator. This difference between method A and B is among others caused by the phase shift which occurs, when either calculating the growth rate of the original reference series or de-trending it.

Business Cycle Tracer for visualization of economic phases and turning points

In the aftermath of the 2008-09 crises, there has been an increased attention on spotting turning point in the business cycling. The business climate tracer is a graphical tool to depict possible changes. The oscillating wave-like nature of the business cycle is transformed to a circular movement. See example.

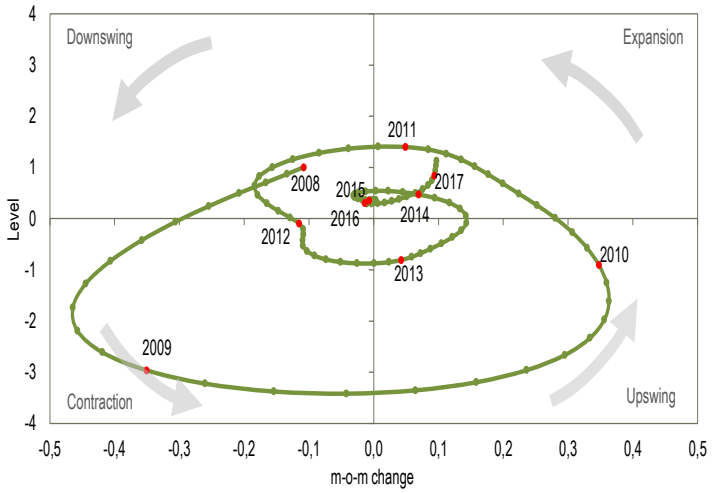
The DG ECFIN produces a series of different climate tracers for the EU and the EU zone aggregated and for individual (major) countries, and for individual sectors and aggregated for the four business surveys (industry, construction, Retail and Services) along with the consumer survey. Statistics Denmark has adopted the methodology and publishes every month Business tendency tracer data both in tables and in an interactive graphic Flash tool. Both mentioned tracers founds among others on Gayer (2007) methodology paper.

Besides this touch upon leading point detection, it is refrained from in the report to go further into the wealth of analytical methods and theoretical research papers that exists on this issue.

Example: Business Climate Tracer

Constructing the economic Climate Tracer (or Cycle Tracer) is a two-stage procedure. The first stage consists of building economic climate indicators, based on principal component analyses of balance series (seasonally adjusted) from the surveys, e.g. from the Industry survey 5 indicators: productions past 3 month, overall order books, export order books and stock of finished products. (ref. DG ECFIN Technical paper 015, April 2017)

In the second stage, the resulting indicator is smoothed using the HP filter in order to eliminate short term fluctuations of a period of less than 18 months. The smoothed series are then normalised (zero mean and unit standard deviation). The resulting series are plotted against their first differences which is the same as the month-over-month changes.



Business climate tracer for EU industry, data cited from the DG ECFIN.

Anti-clockwise one traces the curve month by month through phases of upswing, expansion, downswing and contraction, which corresponds to the four phases of the typical business cycle. The points where the circular curve goes from expansion to downswing, and from contraction to upswing indicates turning points. However, as seen at the graph at about 2015 the downswing did not really happen. Instead of there was a stand still until a new upswing into the expansion quadrant.

Consumer survey and reference series

Perceptions and expectations of consumers constitute their consumption plans. The realized consumption plans are the subject of traditional quantitative surveys. On the other hand, having the information on consumption plans of these economic agents the consumers, gives us prior information. The theory on the link between consumers' attitudes and consumption pattern was first studied by George Katona (1951) and now there is a great literature on this area.

The quantitative data are measured by value or volume terms while ETS data is expressed in ordinal terms (e.g. going from agreement over neutral to disagreement). Therefore typically the balance of the consumer tendency indicator is compared to the growth rate of the reference series which is trend free.

Reference period of individual questions of CTS might be a clue in designating if the balance indicator is a leading or coincident one. While questions evaluating past and current economic situation of the household and the country are expected to be coincident, questions asking about future expectations might result in leading indicators. Examples on leading indicators might be general economic expectation and unemployment expectations. However the relation with the individual balance series and its reference series need to be proved and accordingly the series are designated as coincident or leading.

The comparison of Consumer Confidence Indicator (CCI) with qualitative data is done with the year on year or quarter on quarter changes in qualitative data. The reference series for Consumer Confidence Indicator (see reference series definition in Chapter 3.2.1) is the final consumption expenditure of households. The relation between confidence indicator and its reference series also reflects the quality of the indicator.

Besides the Consumer Confidence Indicator, individual balance series from the consumer survey might also have reference series to compare to.

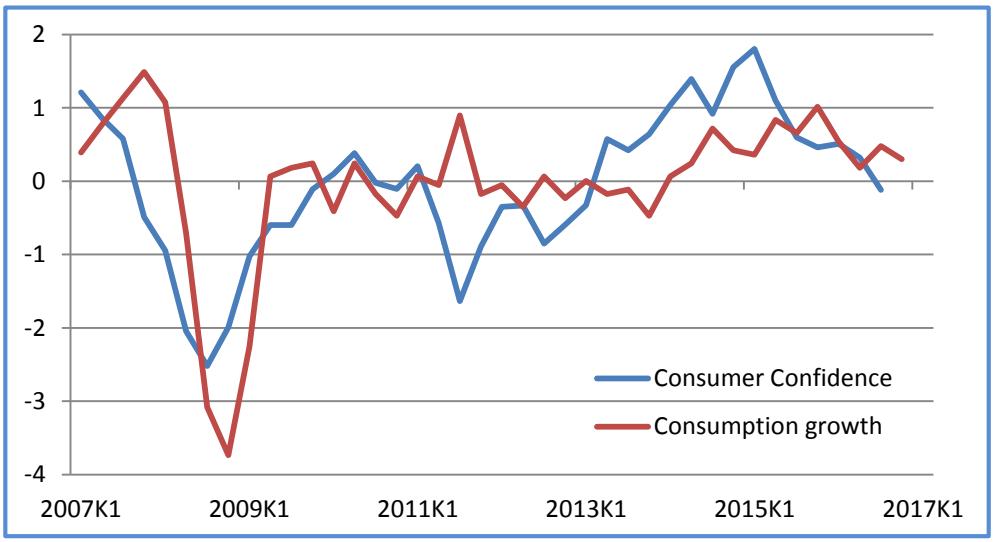
Consumer confidence aims to indicate the current and near future development with respect to the various questions include in the survey. For some uses of the statistics it is sufficient to know whether the development is improving or deteriorating. For others it serves as input to advanced analysis in macro-economic research to anticipate final consumption expenditure of households.

The example below also shows the leading signal is not necessary consistent over a longer time period. Since the consumer indices is sentiment and subjective in its character, various circumstances may influence those, and not reflected in the more one-dimensional “hard data” on consumption.

Example: Consumer Confidence vs. Household consumption growth

The graph shows the relation between Consumer Confidence and household consumption growth. The two series are standardized for visualization purposes. It is seen that the two graphs in general compares well.

Consumer Confidence vs. Consumption growth. Standardized, Denmark



The Consumer Confidence Indicator, is an average of four indicators asking about future plans, and therefore expected to show leading properties. For 2017 to 2009 the CCI shows leading property, and again from 2012 and forward. In the period in between the relation seems more coincident. The overall correlations coefficient is 0,72.

If only measured for 2012-2016 the correlation coefficient is 0,65. However if shifted by 3 quarters so the CCI value for 2012K1 match the Consumption growth for 2012K4 the correlations coefficient increases to 0,84. In other words, the CCI have leading property and indicates the growth development three quarters ahead for the latest five years.

4.3 Socio-economic sentiment indicator

4.3.1 Definition, background and examples

Single socio-economic sentiment indicators could be simply defined as perception of individuals on different aspects of their life such as their health, financial situation and life satisfaction. These indicators aim to measure the phenomenon of subjective well-being directly so usually do not have direct comparable reference series.

Background

Measuring social progress which is a growing area in recent years brings individuals and individuals' perceptions into focus on all life dimensions besides economic dimension. These measures track

social progress and generally portray a people's state of well-being or as interchangeably used quality of life.

Rooting from works of the last three decades, Diener, et al. (2004), Kahneman et al. (2006) and various other researchers formulized a general understanding of different properties of subjective well-being. These studies founded a background for the jointly organised conference "Beyond GDP" in 2007, and the constitution of the Stiglitz-Sen-Fitoussi Commission in 2008 and leading to the "Report by the Commission on the Measurement of Economic Performance and Social Progress" in 2009.

As mentioned in the report of the Commission, among many other institutional working papers, guidelines etc., the concept of well-being is accepted as not directly measurable, but a structured concept of many different dimensions, including subjective well-being as a separate indicator - a complementary measure but not a substitute measure to other well-being indicators. Indeed, according to OECD (2013 p.185) general level of life satisfaction was evaluated as the one of the most important domain for the public opinion assessments in enquiries conducted by UK Office for National Statistics and by the OECD in 20122.

In the Report of the Stiglitz-Sen-Fitoussi Commission, NSOs are invited to broaden their working areas to collect and publish measures of subjective well-being. The Commission notes that the determinants of subjective well-being go well beyond people's income and material condition and NSOs should incorporate questions on subjective well-being in their standard surveys to capture people's life evaluations, hedonic experiences and life priorities.

To position subjective well-being more specifically according to the different quality of life dimensions, it is suggested that different well-being measures addressing evaluation of each dimension can be examined besides the overall measure of well-being. Widely observed examples for this kind of questions in the best practices are: satisfaction from work in general, satisfaction from health status, feeling safe while walking alone at night, etc. Thus these are examples of single socio-economic sentiment indicators.

The data sources of socio-economic sentiment indicators are social surveys which collect data on evaluations, expectations and perceptions of respondents. Frequency of these surveys are generally annually or more rarely for two main reasons. First, well-being of people does not change from month to month; therefore a monthly survey is not necessary in this area. Second, these kind of social surveys are large-scale surveys, thus costly for the survey institution to implement and also causing heavy response burden on the respondent.

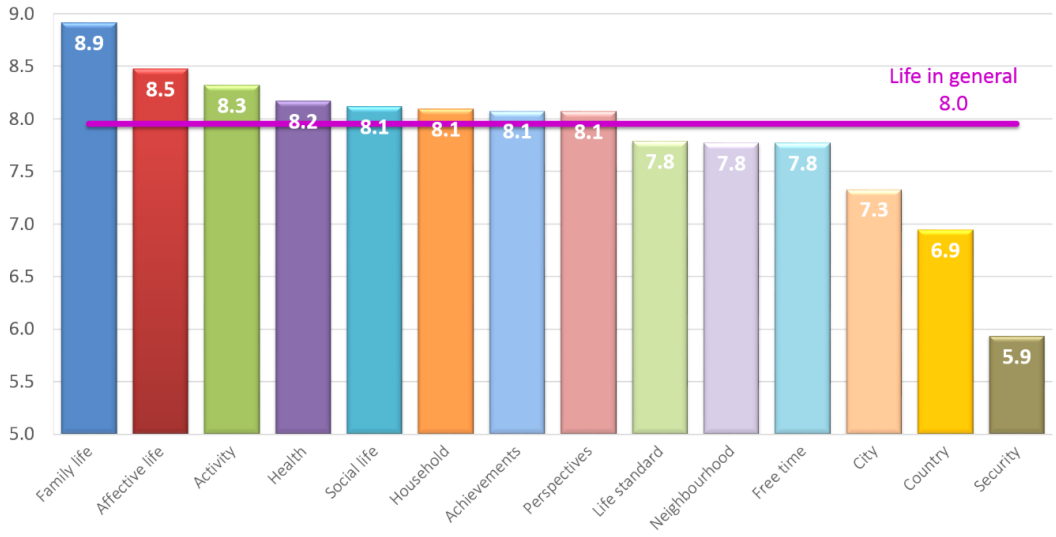
To summarise, measurement of quality of life, well-being and life satisfaction concepts are in the area of socio-economic sentiment indicators. Life satisfaction surveys which measures happiness, satisfaction with life in general and various dimensions of life are well known examples. Information on some well-known studies covering socio-economic sentiment indicators and short information of their data sources are presented below.

OECD Better life index makes it possible to compare well-being across countries based on 11 topics identified as essential in the areas of material living conditions and quality of life for OECD countries and some few non-OECD countries, Brazil, Russia and South Africa. The Index covers four socio-economic sentiment indicators; self-reported health, quality of support network, satisfaction with water quality and feeling safe walking alone at night. Data source of the sentiment indicators is the private institute Gallup World Pool.

Example. Well-being index in Mexico

According to the OECD (2015) the Mexican NSO Instituto Nacional de Estadística y Geografía (INEGI) has one of the most compelling surveys on subjective well-being both in terms of detail of questions and geographical coverage. Surveys deliver results both at regional level and state level as well, through various modules under the main name BIARE (Bienestar Autorreportado), which is an auto reporting well-being module system. The version Amplified BIARE (2014) surveyed about 40.000 households which allowed for indices both at federal and national level.

The indicators are among others: life satisfaction, self-reported health, social connections, civic engagement, satisfaction with time available for leisure, neighborhood etc. The graph shows the national outcome. In a scale from 0 to 10 the general well-being is at 8.0, divided on 14 satisfaction domains of the type the OECD recommends.



Graph source: INEGI's press release 412/15 Oct. 20th, 2015
http://www.inegi.org.mx/saladeprensa/boletines/2015/especiales/especiales2015_10_7.pdf

Eurostat produces the Quality of life indicators. Data within the frame stems from various sources, and among others, sentiment indicators on living conditions are collected via the ad hoc module on subjective well-being of EU-SILC (Survey of Income and Living Conditions). European quality of life study covers one sentiment and one non-sentiment indicator under eleven dimensions of life.

Dimensions and sentiment indicators in each dimension in the European quality of life study are as follows;

- Overall life satisfaction - Overall life satisfaction
- Material living conditions – Satisfaction with finances
- Housing conditions – Housing satisfaction
- Employment – Job satisfaction
- Time use – Satisfaction with time use
- Health – Self-perceived health
- Social relations – Satisfaction with personal relationships
- Safety – Safety feeling when walking alone in the dark
- Governance – Trust in the legal system
- Environment – Satisfaction with living environment

European Commission conducted other studies like Eurobarometer, Qualitative survey about Well-being, Qualitative survey about Well-being in 2030 etc. Eurobarometer analysed how Europeans perceive their political institutions, the current economic situation, European citizenship etc. Qualitative survey about Well-being was conducted in 15 member states providing insights into the notion of personal well-being. Qualitative survey about Well-being in 2030 provided a broad perspective of the concept of well-being conducted in 8 member states to determine the priorities of citizens for the well-being of society as a whole in 2030. It was noted that social equality was considered a key factor of social well-being.

The United Nations publishes the World Happiness Report which includes the ranking on happiness scores based on levels of GDP, life expectancy, generosity, social support, freedom, and corruption. The data source for sentiment socio-economic indicators is Gallup World Pool again as in the OECD Better Life Index.

The World Values Survey is also a source for socio-economic sentiment indicators. It is a global network of social scientists studying changing values and their impact on social and political life and among other topics as economic development, democratization, religion, gender equality and social capital, subjective well-being is also covered in the survey.

The pros and cons

As explained above subjective well-being measurement is a growing area and NSOs are recommended to meet the data need in this relatively new concept especially since the publication of Stiglitz-Sen-Fitoussi Report in 2009. OECD, as the leading international institution in this area has been working on encouraging countries to produce subjective well-being indicators and use them in political decision making procedures.

The ultimate aim of the subjective well-being studies is to end up with better public policies to improve the well-being of people. Thus policy relevance should be the main incentive point for NSOs to produce socio-economic sentiment indicators. These indicators are even needed disaggregated by regions of the country, by gender etc. to be used in local policies and disadvantaged groups for instance.

It is obvious that NSOs have strong advantages in producing socio-economic sentiment indicators due to their capacity, professionalism and institutionalism. NSOs could prefer placing subjective well-being questions to an existing household survey or conducting independent surveys like life satisfaction surveys. In both cases NSOs could use their experiences, network and communication power to produce these statistics. One of the advantages of collecting this kind of data is

In meeting the growing demand on this type of data, the greatest challenge might be the traditional perspective and perception of NSOs itself. Capacity of understanding and explaining this new concept and admitting that subjective well-being indicators are strong complements of traditional indicators might be good starting points to enter this new area of statistics.

Producing and disseminating of subjective well-being indicators are somewhat different than traditional ones. In the production process; placement and wording of the questions and training of interviewers becomes more important in case of collecting these kinds of data. Asking the question on happiness at the beginning or at the end of the questionnaire might lead to having different answers. The replies of the respondents might also depend on the instantaneous mood of him/her, or the behaviour of the interviewer. Therefore the training process should cover the relevant approaches. When it comes to dissemination, users of the data should be informed about the nature of the data set. NSOs are advised to explain well that "subjective measurement" is not a "biased measurement" but a sound statistical measurement on quality of life dimensions.

Lastly it should be noted that because NSOs are governmental organizations, collecting data on individuals' feelings and perceptions about government bodies and satisfaction with public services might lead to biased results and therefore not recommended.

4.3.2 Compiling socio-economic surveys

The subjective well-being measures might be integrated to existing household surveys. Time use surveys, living conditions surveys or health surveys might be good examples to include subjective well-being questions. In order to monitor changes in well-being over time, annual surveys might be preferable. Including measures of subjective well-being in panel surveys might be preferable for researching causality and the drivers of subjective well-being. Methodology of conducting and compiling listed socio-economic surveys (time use, living conditions etc.) within the broad range of socio-economic indicators may differ, according to the specific setups, and is not dealt with in detail in this report.

Another option is to conduct an independent survey aiming to measure well-being of people in the country. Individual quality of life surveys are also carried out in various countries bringing about more detailed information on quality of life by various socioeconomic and geographical characteristics. For instance Quality of life in Denmark is constituted solely on simple sentiment indicators and data is collected by an independent survey. The data collection method for the indicators is mainly by telephone interview or alternatively by web form questionnaire. Questions are about people's satisfaction with life, their economic situation, social relationships, work, health, sense of security, confidence in politicians etc. In the processing data calibrated or post stratified into various socio-economic characteristics like age, level of education, income etc. via register data. An example the Mexican better life survey is previously described in the textbox above.

World Database of Happiness is an archive of research findings on subjective enjoyment of life, run by the Erasmus University Rotterdam, Happiness Economics Research Organization, which states

that it brings together findings that are scattered throughout many studies and provides a basis for synthetic work. The database is indeed an archive of research findings on subjective enjoyment of life. The findings on happiness stored in this database are largely based on responses to survey questions on happiness using verbal response options, such as 'very happy' and 'fairly happy'. The aim is to estimate what degrees of happiness are denoted by such terms in different questions and languages. These degrees are expressed in numerical values on a 0 to 10 scale, which are then used to compute 'transformed' means and standard deviations.

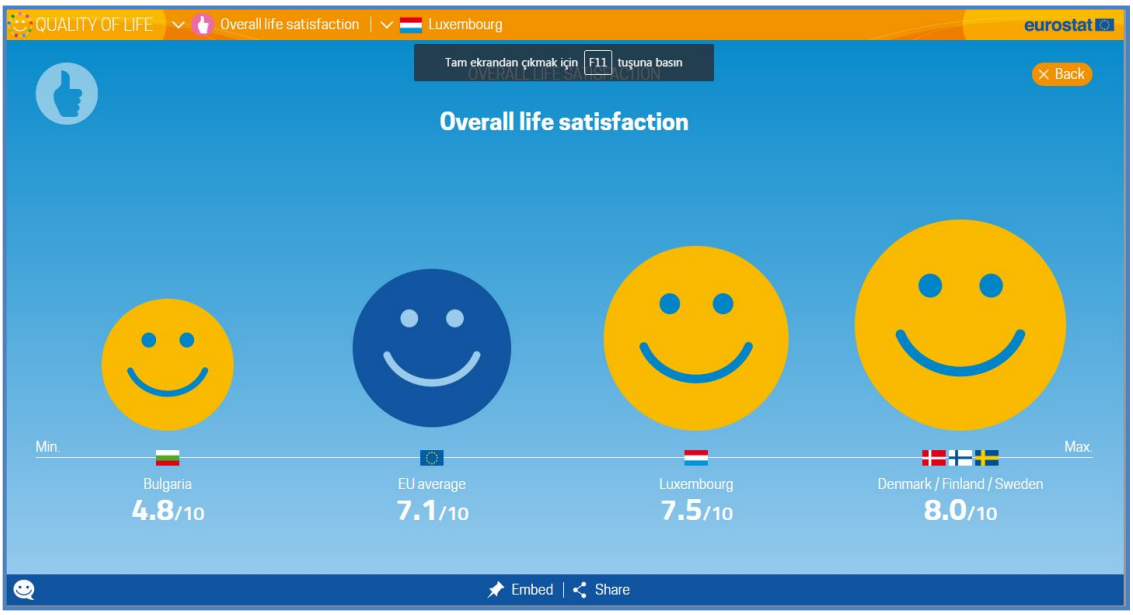
OECD Guidelines on Measuring Subjective Well-being (2013) is the main source on compiling socio-economic surveys. The guideline gives methodological considerations in the measurement of subjective well-being and gives recommendations on; question wording, response formats, question order, context effects, survey mode, timing, response styles and international comparability.

On measuring subjective well-being, the guideline gives advises on sample design, survey design, data processing, coding and questionnaire design. For instance, computer assisted personal interviewing (CAPI) with show cards is advised in terms of data quality, although NSOs are advised to test experimentally the impact of different survey modes on responses to the core measures of subjective well-being, and publish the results of both modes. Lastly, the guideline gives advises on output and analysis of subjective well-being measures.

4.4 Recommendations for disseminations

NSO's are in transition to a more open role in society, where easy available data, and eye catching and engaged dissemination methods are taken into use. This while still ensuring the reputation of official statistical agencies as being trustworthy and impartial *providing an indispensable element in the information system of a democratic demographic, social and environmental situation,* as phrased in United Nations Fundamental Principles of Official Statistics.

Total transparency about the surveys, when not violating privacy of the individual persons or companies, is advised. The questionnaires, or at least the exact phrasings, should be public accessible and the surveys should be attached throughout metadata about the statistical process and method.



An example for the dissemination of socio-economic indicator from Eurostat quality of life web page is as follows.

As mentioned before users of socio-economic sentiment data should be informed about the nature of the data set, that "subjective measurement" is not a "biased measurement" but a sound statistical measurement on quality of life dimensions. This recommendation goes also for economic sentiment indicators from Business Tendency Surveys, that the subjectivity that flavours this kind of indicators is an inherent part of these.

It is of importance that data is made public available in databases and in current newsletters and reports making awareness of updated statistics. A bit hesitating NSO's are taking steps into using social media. Statistical headlines are disseminated and discussed at Twitter, Facebook and LinkedIn.

An example to mention is The Netherlands Central Agency for Statistics (CBS) who has taken a remarkable step forward in the areas of dissemination and communications. Organized from a news centre the statistics is communicated like other political news and weather reports. Along with increased services towards the journalists, like conditional releases, it leads to more interest and awareness about the statistics. Here the timely tendency surveys being the first to indicate change "in the economic weather" might have an important role to play.

Access to micro-data

NSOs often give access to anonymized micro-data for researchers from recognized research institutes, freely or for some fee. Micro-data is the registered survey answers from each individual person or company. Data can be included some additional register based information about the individual. This might be line of business and number of employees for companies, and it might be personal income, educational level and municipality for individual persons. However, after anonymization of data, by deleting name, address and company registration number or personal registration number, it is justified to give access to data without violating the confidentiality the survey is based on. It is a sensible issue, where NSOs are aware off their reputation as trustworthy statistical institute when it comes to keeping the reporting from respondents confidential. And still there is major hesitance about giving open access to micro-data (anonymized) on internet, though it would benefit students, scientists and analysts.

4.5 International comparability

Surveys measuring the perceptions of individuals are conducted somewhat differently across countries. International standards should be developed for the emerging concepts including sentiment indicators for the sake of comparability. As it is mentioned in sub section 4.2.1 international institutions like UN, EU and OECD are already putting an effort on this issue. For the time being, it might be useful to follow an existing harmonized system like EC for economic tendency surveys or OECD for well-being studies.

Data collection period might differ among surveys. For instance tendency surveys are not always conducted across countries on the same period within the month. Responses may then reflect the previous calendar month more than the current month, or vice versa.

Also the exact formulation of questions may be source for differences between countries. For example it can make a bias whether the answer options to question about current order book is below *normal, normal, above normal*, in contrast to the much more value laden options *more than*

sufficient, sufficient, not sufficient. And still, though using the same option phrased in English, the translation may have a different tone in different languages.

On the positive side counts that no matter the phrasing, which may cause different levels in different countries, that direction of changes from month to month (positive, unchanged negative) may be quite independent of the phrasings of the questions and answers.

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