

BANK OF ALBANIA

Methodology of Harmonised Confidence Surveys

APRIL 2017¹

Ermelinda Kristo*

¹ *This methodology substitutes the previous publication: "Methodological explanations - Review January 2014"*

* Bank of Albania, Monetary Policy Department, Short-term Forecasting Office. I am thankful to Ms Liljana Boçi and Ms Alma Kondi, the Albanian Institute of Statistics (INSTAT), for their contribution and close cooperation during the selection and application process of the best methodological practices of the surveys, some of which are explained in the second part of this paper.

Content

I. Introduction	4
II. Methodology of Confidence Surveys	6
III. Confidence indicators and presentation of results.....	13
IV. Methodological changes after the inclusion in the EC programme	14
Annex 1. The harmonized questionnaires	20
Annex 2. Classification of economic activities for business surveys.....	31
Annex 3. Treatment of outliers in quantitative questions.....	33
Annex 4. Confidence Indicators Charts	35

Abbreviations:

BCS - Business Confidence Survey

BoA – Bank of Albania

CCS - Consumer Confidence Survey

CI - Confidence Indicator

EC - European Commission

EU - European Union

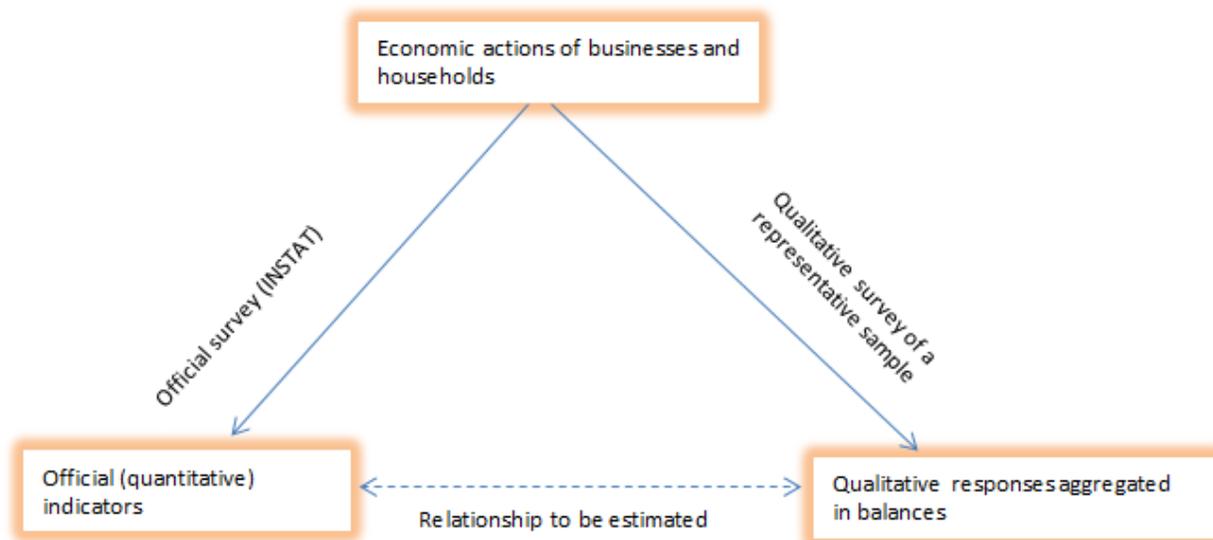
ESI - Economic Sentiment Indicator

INSTAT – Albanian Institute of Statistics

SBR - Statistical Businesses Register

I. Introduction

The purpose of this document is to provide detailed information on the methodological aspects of business and consumer confidence surveys, harmonized with the methodology of other European Union countries. Confidence surveys provide facts and information about business conditions and the status of households based on their opinion (unlike classical surveys that gather facts through figures). Indicators obtained from the confidence surveys are known as qualitative information, as opposed to the quantitative information obtained from the traditional surveys. These indicators complement the set of information received from the national accounts. Information obtained from confidence surveys is considered valuable even for advanced economies that have high quality national accounts because they: (i) provide timely information for the current situation of the economy; (ii) have information on aspects not covered by official statistics; (iii) are not revised. The scheme below shows the relation between the two measurements: traditional quantitative measurements and confidence surveys.



Source: Adapted from Cunningham (1997)².

² Cunningham, A. (1997): "Quantifying survey data", Bank of England, Quarterly Bulletin, Article, August 1997.

The results obtained from confidence surveys are considered valuable if they help explaining or predicting the developments of the official quantitative indicators. If the aspects of business and consumer behaviour measured through confidence surveys are correlated and explain the indicators from official statistics, then the survey data are considered valid to use (e.g.: the consumers propensity to consume is positively correlated to the consumption of population from national accounts; the businesses propensity for investments is correlated with the series of official investments series, etc.)

The first confidence surveys in advanced economies date back to the 1920s, initially organized by chambers of commerce and later by statistical institutions and central banks. Among the earliest business confidence surveys are those organized by the Confederation of British Industries, the Institute of Economic Research (IFO) in Germany and the National Institute of Statistics and Economic Studies (INSEE) in France³. Regarding the consumer confidence, the first survey for measuring their sentiment was organized in the United States in 1946⁴.

The confidence surveys of the Bank of Albania started in 2002, in cooperation with the Institute of Statistics (INSTAT) and initially with the assistance of the IFO. These surveys have provided important information to better understand economic developments. The results of the confidence surveys are used in the periodic analysis of the Bank of Albania to supplement the information obtained from the official statistics. During the last six years, the information from selected balances in the surveys has been included in the short-term forecasting models of economic growth. The Bank of Albania uses the confidence surveys to measure inflation expectations of both businesses and consumers, through direct questioning. Recently, detailed information at micro level obtained from the confidence surveys is used to construct economic uncertainty indicators. Since May 2016, the confidence surveys are carried out on a monthly basis, in line with the methodology of the European Commission.

The quality of the information collected from the confidence surveys is periodically analysed at

³ OECD, 2003: "Business Tendency Surveys: A Handbook"

⁴ University of Michigan, consumers' Survey, "Surveys' Description", <https://data.sca.isr.umich.edu/survey-info.php>

the Bank of Albania. The empirical studies have proven the validity of information taken from them over the years⁵. At the same time, the confidence surveys have evolved, thus meeting the need to enhance the quality of these surveys, in the national and international plan⁶. Starting from May 2016, the confidence surveys are carried out under the Joint Harmonized EU Programme of Business and Consumer Surveys carried out in member and candidate countries. This programme aims to improve the quality of survey data and to align the practices used from different countries. Information from a common methodology is comparable and may be used to study the cyclical economic development of various countries.

This document explains the methodological characteristics of the confidence surveys (second part), describes and presents the confidence indicators (third part) and outlines the changes that resulted after participating in the EC programme (fourth part). The detailed questionnaires that are used for these surveys and more technical aspects of the methodology are presented in the annexes.

II. Methodology of Confidence Surveys

The main characteristics of every survey are the questionnaires, the selection of a representative sample, the way information is collected, and lastly the aggregation and presentation of the results. In contrast to traditional quantitative surveys, the process is faster in the case of confidence surveys. The qualitative nature of the questions facilitates the answering process of businesses or households. Also, the data collection and their aggregation in quantitative indicators is a rather easier process compared to quantitative surveys. The main characteristics of the confidence surveys are explained in the following.

The questionnaire. One of the main characteristics of the questionnaire of confidence surveys

⁵ See Çeliku and Shtylla (2007): "Business Confidence Survey: methodological aspects and economic analysis of the results"; Lama and Istrefi (2007): "Consumer's confidence and Albanian economy – a new information bridge"; Kristo (2010): "Confidence indicators, their information content and synchronization with EU countries"; Kristo, Boka and Ibrahimaj (2014) "Business and consumer confidence survey- methodological explanations, review January 2014".

⁶ Cooperation and technical assistance from IFO until 2006 and with the European Commission from 2015.

is its simplicity. Businesses and consumers complete it in a much shorter time compared to quantitative questionnaires. Almost each question of the BCS and the CCS are multiple choice questions. The BCS questions usually have three alternative answers (positive, neutral, negative), and consumers must choose from five alternatives (very positive, positive, neutral, negative, very negative). The full list of the questions according to the questionnaires for each sector is presented in annex 1. The fourth part of this methodology document explains the changes of the questionnaires after inclusion in the harmonization programme.

Interviewing. Participation in the survey is not mandatory. The quality of the results depends on the businesses and consumers' willingness to take part. In order to increase the chances for responses the following measures are taken:

- (i) Direct interview. The questionnaire is filled in by the INSTAT interviewer based on face to face interviews with the consumer or the business representative. This speeds up the process of getting the answers and helps clarify any uncertainties the respondents might have.
- (ii) For the consumer confidence survey, for each household included in the primary sample unit there are four others serving as backup. These may substitute the first chosen household in the case it refuses to answer or the contact information is not to be found. This reduces to the minimum the number of questionnaires left unanswered (*unit non response*).
- (iii) The interviewers are trained in advance concerning the questionnaire, the nature of the information it demands, and the best way of getting the answers. In general, the interviewers aim at getting answers to all the questions in the questionnaire, lowering thus the number of questions left unanswered (*item non response*)
- (iv) A detailed manual for each questionnaire is prepared for the interviewers. This manual explains every question and provides a contact phone number in case on any uncertainty that might come across during the interviews.
- (v) At the end of every questionnaire there is the link of the Bank of Albania web page, where businesses can find the analysis and the latest published results.
- (vi) Occasionally, informative brochures are prepared and sent to the businesses together with the questionnaire. These brochures offer detailed information for the sector where the business

operates.

Target population and sample. The accuracy of results drawn from the confidence surveys depends on the sample design and on the quality and completeness of the lists of the businesses and consumers. The Statistical Businesses Register (SBR) of INSTAT serves as the population list for the businesses survey. The register includes every legal units registered at the National Centre of Registration and Tax Authorities. Table 1 shows the main statistics of the population for all four sectors of the business surveys based on SBR 2015, compiled by INSTAT experts. Firms operating in the industry and services sectors employing less than 5 employees and firms operating in construction and trade sectors employing less than 2 employees are excluded before proceeding further. This is called the frame after cut-off and will serve as the base for randomly selecting the businesses to form the representative sample.

Table 1: Data on population frame and sample (nr. of businesses)

Sector	Population (nr. of businesses registered in SBR)	Frame before cut-off	Frame after cut-off	Sample
Industry	10257	9978	2264	404
Construction	4946	4821	2858	203
Services	52125	51470	4695	342
Retail Trade	45529	45177	15823	342

For the **industry**, the frame after the cut-off includes 23% of the number of the enterprises in the sector, which account for 93% of the total turnover of the sector and for 80% of the employees. For **construction**, the frame after the cut-off includes 59% of the enterprises, which represent 99% of the turnover and 94% of the employees in the construction sector. The frame for the **services** survey includes only 9% of the total enterprises in this sector, demonstrating a very fragmented sector. On the other hand these enterprises represent 80% of the total turnover of the sector and 48% of the employees in the service sector. Finally, in the **trade** sector, the number of businesses in the frame accounts for 22% of the whole population from

SBR (whole trade sector). These enterprises account for 85% of the turnover and 64% of the total employees.

The consumer's list, which serves as population for CCS, is taken from the Population and Housing Census 2011 data. This register contains the complete count of all persons, households and dwellings in Albania. On 1 January 2016, the number of population over 15 years old, which serves as population of CCS, consists of 2.376 million individuals.

Sampling method. Theoretically, there are several methods used to extract information from a given population. The direct way is to collect the desired information from all the individuals within the population being surveyed. In practise this is a costly method which takes too much time. Other methods rely on a sub-sample or a "representative" sample extract from the population being surveyed. The extracted information from the sample represents the whole population. The two main methods to create a sample are: purposive and random sampling. In the case of confidence surveys of the Bank of Albania, the sample is chosen through random selection, since it provides representative results for the whole population without making further assumptions. In the case of CCS, the sample is created to represent all consumers aged above 15 years. For the BCS, the population represents almost all the businesses registered in the Statistical Business Register of INSTAT. Annex 2 contains more details on the BCS population.

The list of the best methodology practices for the confidence survey, suggests that, before continuing with the random selection, the population should be separated into groups or strata with similar characteristics, e.g. population of similar size group. The reason for this grouping is that the variation inside the group is smaller than the variation of the whole population. Because of this, random selection becomes a more efficient method, ensuring thus a more accurate evaluation of the population indicators. In order to define the strata, other official indicators known for the surveyed population are used. After stratification, the random selection is applied on each of these groups. For businesses, the strata are chosen based on two

criteria: size and type of economic activity. For the first criteria, the size, the information on the number of the employees from the Businesses Register of INSTAT is used. For dividing by economic activity, the classification of businesses registered according to the Nomenclature of Economic Activities Rev.2 is used. In accordance with the best practices, the allocation of businesses into strata is done using the Neyman optimum allocation, based on the number of employees. Regarding consumers, the criteria for the selection of strata are: geography and the density of the region where they belong to.

Data collection. The field work is done between day 1 and 15 of each month when businesses and households respond to the questionnaires. Interviewers are trained both periodically and every time new questions are introduced in the questionnaire . The data entry, the quality control, the weighting and the aggregation process are done in 5 to 7 working days before the end of the month. Before starting the aggregation process, the outliers are identified and removed. Annex 3 explains the method used for this process.

Aggregation. The process of aggregation means that the qualitative information taken from the confidence surveys is quantified in a single number. The aggregation process is carried out in three main levels, starting with each question (net balance), then in sector level (confidence indicators) and finally extracting a representative indicator for the whole economy (Economic Sentiment Indicator).

In the first level of aggregation, the responses of businesses and consumers are quantified through the balance indicator. This is the difference between the percentages of businesses/consumers that report an improvement to those that report deterioration. The balance values range between -100 and 100 percentage points. Although, in the case of businesses they are required to report changes compared to the previous quarter accounting for the seasonal fluctuations, the balances show seasonal behaviour. Because of this, the time series are adjusted for seasonality.

After the first level of aggregation, net balances are evaluated to check how informative they are. The most informative balances, which have the strongest linear connection with the reference series, are aggregated at sector level, in order to obtain the confidence indicators. After the inclusion in the EC programme, the composition of the confidence indicators was revised. More information on the changes incurred after the process of adapting to a common methodology may be found in part IV of this methodology document. Finally, all selected balances used to construct the sectors' confidence indicators are aggregated at economic level.

Weighting. The consumer's answers are weighted after the questionnaire is filled out and data entry has finished. The weighting criteria are: geographic area, age of the respondent, gender and size/density of the population. The weighting process is done after the data collection, because parts of consumers' characteristics are not known at the time of the sample creation (e.g. age or gender).

In the case of businesses, weighting is done in two phases. The weighting in the first phase reflects the sample structure, whereas weighting in the second phase reflects the structure of the economy. The second phase weights are in proportion with the relative size of the different branches of the economy. By using the terminology of the OECD manual, the first phase weights are called sample weights, while the second phase weights are called size weights.

The sample weights are calculated as the inverse of the inclusion probability for a firm to be selected in the sample. In the case of large enterprises, where the probability of inclusion in the sample is 1, the weight is also 1. The small and medium-sized firms weights are more than 1, being that the probability of selection in a given strata is smaller than 1. The larger the strata is, the smaller is the probability of the firm to be selected, the larger is the weight that is going to be assigned to this firm. So the firm that belongs to a larger group has the biggest weight in the sample. Somehow its response will represent the answer of other firms within that group. If the sample would be the simple random selection, not stratified, every firm would have the same probability of representation and weight.

The size weights ideally would depend on the nature of the question that is being aggregated at higher level. For example, questions on production must be weighed with the relative value of production of the surveyed business; questions on employment with the number of employees, etc. In practice, this method is costly and difficult to use. Usage of outside information is recommended to represent as good as possible the size of groups and sub branches of the economy. In our case, we chose the turnover data from the Structural Business Survey.

In summary, the aggregation of businesses' results is provided by the standard Horvitz-Thompson (HT) formula:

$$a. Y^{HT} = \frac{1}{W} \sum_{i \in p} \frac{w_i}{\pi_i} y_i$$

where Y^{HT} is the HT population estimation for the Y indicator; p is the sample; π_i is the inclusion probability, w_i is the size weight, W is the population weight (total of the size weights of all units included in the population).

In the first phase of weighting, the answers of each business and consumer are weighted individually using the sample weights. These weights are reviewed every month and are redistributed, if there are businesses that have not responded. The weight of the enterprises that have not responded is redistributed to the enterprises that have answered within the initial group they were selected. So, the initial weight is recalculated. In a second phase, the businesses' answers are weighted again, to better reflect the structure of the economy, by using the size weights (w_i). The weighing of the second phase is done to calculate indicators at higher aggregate levels (at first and second level of NVE Rev.2). Groups with greater income are assigned greater weight during the averaging process to reach the aggregated indicator⁷. So, the size weight falls in the above-mentioned formula and is used only at the highest level of

⁷ Weights are calculated based on the official statistic of businesses' turnover from the Structural Business Survey data.

aggregation (w_i in the above formula is 1).

III. Confidence indicators and presentation of results

After weighting and aggregation is completed, five confidence indicators are constructed, which summarize the confidence of each surveyed sector as well as a single indicator which sums up the confidence of all agents in economy, the Economic Sentiment Indicator. The Industry Confidence Indicator (ICI) is currently calculated as the simple arithmetical average of *production, inventories and new orders* balances, respectively question 1, 2 and 4 in the questionnaire on Industry. The Construction Confidence Indicator (CCI) is the arithmetic average of *construction activity and orders* (question 1 and 3 in the questionnaire of construction). The Services Confidence Indicator (SCI) is the arithmetic average of the *business situation and demand* (question 1 and 2 in the questionnaire of service). The Trade Confidence Indicator (TCI) is the arithmetic average of *business situation and employment* expectations balances (question 1 and 5 in the questionnaire of trade). The Consumer Confidence Indicator (CCI) is the arithmetic average of the expectations balances for the *financial situation and economic situation, major purchases and income and expenditure* (question 2, 4, 8 and 12 in the questionnaire of consumers). Finally, all the balances of the questions in the CIs as above are used to construct the Economic Sentiment Indicator (ESI).

Balances used to calculate the aggregate business confidence indicators are adjusted in advance for seasonality. They are selected based on their correlation with the annual change of the real GDP, chosen as the reference series. The balances are seasonally adjusted and standardized before being further aggregated at the economy level to form ESI. The ESI is calculated as the weighted average of the standardized balances. The calculation of the weights for each sector is based on the share of the value added of each sector in the GDP. To simplify the interpretation and graphical representation, the long-term average of ESI is 100 and its standard deviation is 10^8 . ESI = 100 means a neutral view on the performance of the economy.

⁸ The calculation of the ESI is based on the European Commission methodology. More on the various aggregate indicators that are built at the Bank of Albania are presented in the article "Confidence indicators, use of information

ESI>100 means an optimistic view for the economic activity. ESI<100 means a pessimistic view for the economic activity.

The presentation of the confidence survey results considers different types of users and their needs. The website of the Bank of Albania publishes periodically an overall analysis of the results, 15 days after the end of each quarter. It analyses the main developments of confidence indicators and their balances. The performance of confidence indicators is shown graphically and is compared with the respective historical averages, thus making the interpretation of results easier. Time series of confidence indicators as well as detailed, seasonally adjusted and unadjusted balances, are published in *Excel* format for every researcher, journalist or student who needs detailed information.

IV. Methodological changes after the inclusion in the EC programme

Starting from 1961, The European Commission manages the Joint Harmonised EU Program of Business and Consumer Survey in member and candidate countries⁹. The first harmonized survey was originally set up in 1962, in the industry sector, and since then the programme has expanded in terms both of the sectors it covers and the participating countries. Currently, the harmonization program covers the five main economic sectors (industry, construction, services, trade and consumers) in 28 countries of the European Union as well as in five candidate countries: Albania, Macedonia, Montenegro, Serbia and Turkey.

The main purpose of the harmonization programme is to provide useful information for economic analysis, short-term forecasting and economic research in the Member States, the euro area and the EU. The harmonization programme enables the comparison of the results of confidence surveys between different countries. The products of this programme are important

and synchronization with EU countries", Bulletin of the Bank of Albania, March 2010 H2.

⁹ The European Commission, 2006: "The Joint Harmonised EU Programme of Business and Consumer Surveys", Special Report No 5, European Economy.

tools for EU economic surveillance and serve for a better harmonization of economic policies. The European Commission methodology has been used by the OECD to define a common methodology for conducting surveys in other OECD member countries as well. Starting in 1991, the European Commission, in co-operation with the OECD, has drawn up guidelines and recommendations on best practices for conducting confidence surveys.

Institutions that will carry out the harmonized surveys are selected through an invitation to apply from the European Commission and are supported by a grant that finances up to 50% of the total cost of conducting surveys. Data collected from harmonized confidence surveys remains the property of the institution that carries them out, but the EC has the right to use these data in parallel. After receiving the invitation from the European Commission, the Bank of Albania (BoA) applied in October 2015. The application phase to participate in the EC programme has ended successfully and the BoA was declared a winner in January 2016. Starting from May 2016, BoA, in cooperation with INSTAT, will continue these surveys under the Joint Harmonized EU programme of Business and Consumer Surveys (BCS) for EU member and candidate countries.

The transition of Albania's Confidence Surveys to the EC programme has the following advantages:

- (i) The monthly database will be enriched, as with the new standard required by the EC, confidence surveys are carried out on a monthly basis rather than on quarterly basis.
- (ii) Business and consumer sample selection methodology has been further improved to better represent all the population.
- (iii) The survey results are weighted so that the chosen sample best represents the population structure of businesses and consumers in the study.
- (iv) The better alignment with the methodology applied in other European Union countries will enable comparative analysis of synchronization of business cycles.

The Bank of Albania has gradually adapted the methodology to the EU one over the years. However, participation in the programme will bring some changes, mainly as follows:

- (I) Higher frequency of surveys (from 4 to 12 times a year);
- (II) Questionnaires are fully harmonized with EC questionnaires;
- (III) Methodology is further aligned with EC recommendations and best practices.

As a result of the second point above, the publishing of some time series of the business survey will discontinue, as the new questionnaire does not include the related questions. At the same time, new series will begin to be constructed, both for businesses and consumers, based on new questions included in the BCS and CCS questionnaires. Table 2 summarizes the main changes that have occurred in the business questionnaires after the transition to the harmonization programme. In CCS questionnaires, the main change is the comparison reference period for the questions which will be annual (previously quarterly)¹⁰. Apart from changing the reference period of comparison, the new CCS questionnaire will continue to have all previous questions (question 1 through 12, annex 1). Questions 13 to 15 are new questions added to the CCS questionnaire.

Some of the BCS questions, that are not part of the harmonized questionnaire, will be included in the quarterly questionnaires¹¹. The months in which they will be included in the survey corresponds with the same month at which quarterly surveys were conducted before the harmonization process. Additional questions are those about the businesses' *financial situation*, the *capacity utilization* rate (in construction, service and trade sectors) and *inflation expectations*. Twice a year, in April and October, a section related to investments is added in the industry questionnaire (Annex 1).

¹⁰ It is deemed that the change in how the question is formulated (requiring annual comparisons) will not lead to a break of time series of indicators derived from the CCS, as previous analyses have shown that businesses and consumers consider a longer period of comparisons when providing answers (despite being asked to make quarterly comparisons). The analysis of the results that are conducted to highlight the comparison period yields similar results to the analyses conducted by EU countries for the indicators of confidence surveys.

¹¹ In March, June, September and December.

Table 2: Comparison of questionnaires before and after the harmonization

Industry Sector	
Old questionnaire	Harmonized questionnaire
-Economy development, current and expected	
-Business situation, current and expected	
-Factors limiting activity	-Factors limiting production (P8)
-Demand, current and expected	
-Exports, current and expected	-Orders from exports, current and expected (P3 + P12)
-Production, current and expected	-Production, current and expected (P1 + P5)
-Stocks, current and expected	-Current inventors (P4)
-Production prices, current and expected	-Production prices, expected (P6)
-Level of employment, current and expected	- Level of employment, expected (P7)
-Wage, current and expected	
-Financial situation	-Financial situation (P17)
-Capacity utilization rate	-Capacity utilization rate (P13)
-Current capacity, qualitative assessment	-Current capacity, qualitative assessment (P9)
-Orders compared to normal, current and expected	-Orders compared to normal, current (P2)
-Months of production assured	-Months of production assured (P10)
-Factors that limit capacity utilization	
-Financial constraints	
-Inflation expectations	-Inflation expectations (P18)
	-Competitiveness in the domestic market (P14)
	-Competitiveness in Foreign Markets, Within the EU (P15)
	-Competitiveness in foreign markets, outside the EU (P16)
	-Orders, Quarterly Comparison (P11)
Construction sector	
Old questionnaire	Harmonized questionnaire
-Economy development, current and expected	
-Business situation, current and expected	
-Factors that limit activity	-Factors that limit activity (P2)
-Demand, current and expected	
-Production, current and expected	-Construction activity, current (P1)
-Stocks, current and expected	
-Production prices, current and expected	-Prices, expectations (P5)
-Level of employment, current and expected	-Level of employment, current and expected (P8+P4)
-Wage, current and expected	
-Current financial situation	-Current financial situation (P9)
-Capacity utilization rate	-Capacity utilization rate (P7)
-Current capacity, qualitative assessment	
-Orders compared to normal, current and expected	-Orders, current (P3)
-Months of production assured	-Months of production assured (P6)
-Factors that limit capacity utilization	
-Financial constraints	
-Inflation expectations	- Inflation expectations (P10)
Services sector	
Old questionnaire	Harmonized questionnaire
-Economy development, current and expected	
-Business situation, current and expected	-Business situation, current (P1)
-Factors that limit activity	-Factors that limit activity (P7)
-Demand, current and expected	-Demand, current and expected (P2+P3)

-Production prices, current and expected	-Prices, expectations (P6)
-Level of employment, current and expected	-Level of employment, current and expected (P4+P5)
-Wage, current and expected	
-Current financial situation	-Current financial situation (P10)
-Capacity utilization rate	-Capacity utilization rate (P9)
-Current capacity, qualitative assessment	
-Months of production assured	
-Factors that limit capacity utilization	
-Financial constraints	
-Inflation expectations	-Inflation expectations (P11)
	-Possibility to increase the activity volume (P8)
Trade sector	
Old questionnaire	Harmonized questionnaire
-Economy development, current and expected	
-Business situation, current and expected	-Business situation, current and expected (P1+P4)
-Factors that limit activity	-Factors that limit activity (P7)
-Demand, current and expected	
-Prices, current and expected	-Prices, expectations (P6)
-Level of employment, current and expected	-Level of employment, current and expected (P10 + P5)
-Wage, current and expected	
-Financial situation	-Financial situation (P9)
-Capacity utilization rate	-Capacity utilization rate (P8)
-Current capacity, qualitative assessment	
-Months of production assured	
-Factors that limit capacity utilization	
-Financial constraints, ways	
-Inflation rates expectations	-Inflation expectations (P11)
-Stocks, current and expected	-Stocks, current (P2)
	-Orders with suppliers, expected (P3)

As a result of changes in the questionnaires and after reviewing the information in the individual balances in terms of their correlation with the reference series, the components of Confidence Indicators went through several changes (the consumer confidence indicator component balances remained unchanged). The optimal combination of questions that have a stronger correlation with the reference series and consequently are included in the calculation of Confidence Indicators may change over time. The European Commission highlights the importance of periodic control over the information in the Confidence Indicators¹². The criterion for the selection of the component balances for the confidence indicator for each sector is: the strong linear correlation with the reference series (the strength of the relation measured by the coefficient of correlation). The latest review of confidence indicators was done in January 2014, where some of the component balances were changed. Table 3 shows the

¹² European Commission, User Guide, 2015: "The Joint Harmonized EU Program of Business and Consumer Surveys".

component balances of confidence indicators before and after the harmonization process.

Table 3: Changes in the component balances of confidence indicators

Balances of old CI	New CI balances
Industry	
Production	Production
Inventory	Inventory
Financial situation	New orders
Construction	
Demand	Construction activity
Production	New orders
Employment	
Services	
Business situation	Business situation
Demand	Demand
Financial situation	
Trade	
Business situation	Business situation
Employment	Employment expectations
Financial situation	

In Annex 4 are presented charts that compare the new confidence indicators, constructed after entering the harmonization programme, with the previous ones. As shown from these charts, the new and old confidence indicators show a very similar dynamic¹³. They show also a similar relation with the reference series, measured by the correlation coefficient (numbers shown in brackets).

Concerning changes in the sampling methodology, the main change is the transition from a purposive to a probabilistic sampling. As explained in the second part of this methodology document, probabilistic methods allow conclusions to be drawn for the surveyed population¹⁴. Further on, the process of weighting the individual answers based on the sampling characteristics make the survey results more representative of the population. For businesses, the second phase weighting, which takes into account the size weights, ensures also better representation of the structure of the economy.

¹³ This conclusion is supported by the results of the analysis of correlation coefficients that fluctuate from 0.86 for the trade sector to 0.97 for the construction sector.

¹⁴ The previous method, i.e. purposive is also suggested in the statistical practices of confidence surveys.

Annex 1. The harmonized questionnaires

Industry sector

Monthly questions

1. During the last three months, has production in your firm...?
 1. Increased
 2. Remained unchanged
 3. Decreased

2. Do you consider your current order books to be...

 1.more than sufficient (above normal)
 2.Sufficient (normal for the season)
 3.Not sufficient (below normal)

3. Do you consider your current export order books to be...

 1.more than sufficient (above normal)
 2.Sufficient (normal for the season)
 3.Not sufficient (below normal)
 4. There is no exports activity

4. Do you consider the stock of your finished products to be...
 1. too large (above normal)
 2. adequate (normal for the season)
 3. too small (below normal)

5. How do you expect your current stock of finished products to be..? It will...
 1. Increase
 2. Remain unchanged
 3. decrease

6. How do you expect your selling prices to change over the next three months?
 1. Increase
 2. Remain unchanged
 3. Decrease

7. How do you expect your firm's total employment to change over the next three months? It will...
 1. Increase
 2. Remain unchanged
 3. decrease

- #### Quarterly questions
8. Which are the main factors that are currently limiting your production? (You can select more than one answer)
 1. There are no factors
 2. Insufficient demand
 3. Lack of labour force
 4. Lack of materials and/or machinery
 5. Financial restrictions
 6. Other, specify _____

9. Given the current demand and expectations for the demand in the up-coming months, do you estimate the actual production capacity to be...
- 1. More than sufficient
 - 2. Sufficient
 - 3. Not sufficient
10. How many months of production are assured by your current ordering books?
Our productions is covered for _____ months
11. How have your orders developed over the past three months? They have...
- 1. Increased
 - 2. Remain unchanged
 - 3. Decreased
12. How do you expect your export orders to develop over the next three months? They will...
- 1. Increase
 - 2. Remain unchanged
 - 3. Decrease
 - 4. There is no export activity
13. At what capacity is your company currently operating (as percentage of full capacity)?
_____ % of the total capacity
14. How has your competitive position developed in the domestic market over the past three months? It has....
- 1. Improved
 - 2. Remain unchanged
 - 3. Worsened
15. How has your competitive position developed in the foreign markets within EU, during the past three months? It has...
- 1. Improved
 - 2. Remain unchanged
 - 3. Worsened
16. How has your competitive position developed in the foreign markets outside EU during the three past months? It has...
- 1. Improved
 - 2. Remain unchanged
 - 3. Worsened
17. The financial situation of your firm during the past three months was...
- 1. Better
 - 2. Same
 - 3. Worse
18. How do you think will the inflation change after a year? It will...
- 1. Increase 0-2%
 - 2. Increase 2-4%
 - 3. Increase above 4%
 - 4. Decrease

Construction sector

Monthly questions

1. How has your building activity developed over the past three months? It has..

- 1. Increased
- 2. Remain unchanged
- 3. Decreased

2. Which are the main factors that currently limit your construction activity? (You can select more than one answer)

- 1. None
- 2. Insufficient demand
- 3. Weather conditions
- 4. Shortage of labour force
- 5. Shortage of materials and/or equipment
- 6. Financial restrictions
- 7. Other, specify_____

3. Do you consider your current overall order books to be...

- 1. more than sufficient (above normal)
- 2. Sufficient (normal for the season)
- 3. Not sufficient (below normal)

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

- 1. Increase
- 2. Remain unchanged
- 3. Decrease

5. How do you expect the prices you charge to change over the next three months?

- 1. Increase
- 2. Remain unchanged
- 3. Decrease

Quarterly questions

6. 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: ____

7. To what extent are you currently using your production capacity?

_____in % of the total capacity

8. How has employment level changed during the past three months? It

- 1. Increased
- 2. Remained unchanged
- 3. Decreased

9. The Financial situation of your firm during the past three months was...

- 1. Better
- 2. Same
- 3. Worse

10. How do you think will the inflation change after a year? It will...

- 1. Increase 0-2%
- 2. Increase 2-4%
- 3. Increase above 4%
- 4. Decrease

Service sector

Monthly questions

1. How has your business situation developed over the past three months? It has...

- 1. Improved
- 2. Remained unchanged
- 3. Worsened

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

- 1. Increased
- 2. Remained unchanged
- 3. Decreased

3. How do you expect the demand (turnover) for your company's services to change during the next three months?

- 1. Increase
- 2. Remain unchanged
- 3. decrease

4. How has your firm's total employment changed over the past three months?

- 1. Increased
- 2. Remained unchanged
- 3. Decreased

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

- 1. Increase
- 2. Remain unchanged
- 3. Decrease

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

- 1. Increase
- 2. Remain unchanged
- 3. Decrease

Quarterly questions

7. Which main factors are currently limiting your business? (You can select more than one answer)

- 1. None
- 2. Insufficient demand
- 3. Shortage of labour force
- 4. Shortage of space and/or equipment
- 5. Financial constraints
- 6. Other, specify _____

8. If the demand increases, will you be able to increase the volume of your activity with your present resources?

- 1. Yes → Go to 8.1
- 2. No → Go to 9

8.1 If yes, how much? _____%

9. At what extent are you currently using your business' capacity?

_____ In % of the total capacity

10. The financial situation of your firm during the past three months was...

- 1. Better
- 2. Remained unchanged
- 3. Worse

11. How do you think will the inflation change after a year? It will...

- 1. increase 0-2%
- 2. Increase 2-4%
- 3. Increase above 4%
- 4. Decrease

Trade sector

Monthly questions

1. How has your business activity (sales) developed over the past three months? It has...

- 1. Improved (increased)
- 2. Remained unchanged
- 3. Worsened (decreased)

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

- 1. Too large (above normal)
- 2. Adequate (normal for the season)
- 3. Too small (below normal)

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

- 1. Increase
- 2. Remain unchanged
- 3. Decrease

4. How do you expect your firm's orders placed with suppliers to change over the next three months? They will...

- 1. Improve (increase)
- 2. Remain unchanged
- 3. Worsen (decrease)

5. During the next 3 months, do you expect the employment level in your firm to....

- 1. Increase
- 2. Remain unchanged
- 3. decrease

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

- 1. Increase
- 2. Remain unchanged
- 3. Decrease

Quarterly questions

7. Which are the main factors that are currently limiting your activity? (You can select more than one answer)

- 1. None
- 2. Insufficient demand
- 3. Shortage of labour force
- 4. Shortage of space and/or equipment
- 5. Financial constraints
- 6. Other, specify _____

8. At what extent are you currently using your capacities?

_____ In % of the total capacity

9. The Financial situation of your firm during the past three months was...

- 1. Better
- 2. Remained unchanged
- 3. Worse

10. How has employment level changed during the past three months? It

- 1. Increased
- 2. Remained unchanged
- 3. Decreased

11. How do you think will the inflation change after a year? It will...

- 1. increase 0-2%
- 2. increase 2-4%
- 3. increase above 4%
- 4. decrease

Investments questionnaire

I1. State percentage change in investment last year (2016) on investment two years ago (2015):
_____ %

I2. State percentage change in investment this year (2017) on investment last year (2016):
_____ %

Investment structure:

S1. Investments carried out this year are of the following kind (choose one or several categories):

- 1. Replacement of worn-out plant or equipment
- 2. Extension of production capacity
- 3. Investment designed to streamline production
- 4. Other investment objectives (pollution control, safety, etc.)

S2. Investments you plan to make during the next year are of the following type...(choose one or several categories)

- 1. Replacement of outdated equipment and structures
- 2. Increase of production capacity
- 3. Investments for the modernization of production
- 4. Investments for other purposes (pollution control, safety, etc.)

Factors influencing investments:

F1 and F2. How have the following factors influenced investment this year and will influence investments next year?

- a. Demand (capacity utilization rate and future sales expectations)
- b. Financial resources and expected profit
- c. Technical factors (mainly technology developments, labour force capability and terms set by public authorities)
- d. Other factors (may include fiscal policy, taxes, the possibility of transferring production abroad, etc.)

Consumer's questionnaire

Monthly questions

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

- 1. Got a lot better
- 2. Got a little better
- 3. Stayed the same
- 4. Got a little worse
- 5. Got a lot worse
- 9. don't know

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

- 1. Get a lot better
- 2. Get a little better
- 3. Stay the same
- 4. Get a little worse
- 5. Get a lot worse
- 9. I don't know

3. How has the general economic situation in this country changed during the past 12 months? It...

- 1. Got a lot better
- 2. Got a little better
- 3. Stayed the same
- 4. Got a little worse
- 5. Got a lot worse
- 9. I don't know

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

- 1. Get a lot better
- 2. Get a little better
- 3. Remain unchanged
- 4. Get a little worse
- 5. Get a lot worse
- 9. I don't know

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

- 1. Risen a lot → Go to question 5.1.A
- 2. Risen moderately → go to 5.1.A
- 3 Risen slightly → go to question 5.1.A
- 4. Stayed about the same → go to question 6
- 5. Fallen → go to question 5.1.B
- 9. Don't know → go to question 6

5.1. If question 5 was answered by 1, 2, 3 or 5: By how many per cent do you think that consumer prices have gone up/down over the past 12 months?

- A. Risen by ____% or
- B. Fallen by ____%

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

- 1. Will increase more rapidly → go to question 6.1.A
- 2. Increase at the same rate → go to 6.1.A
- 3. Increase at a slower rate → go to 6.1.A
- 4 Stay about the same → go to 7
- 5. Fall → go to 6.1.B
- 9. Don't know → go to 7

6.1. If question 6 was answered by 1, 2, 3 or 5: By how many per cent do you expect consumer prices to go up/down change in the next 12 months?

- A. Will increase by ___% or
- B. Will fall by ___%

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

- 1. Increase sharply
- 2. Increase slightly
- 3. Remain the same
- 4. Fall slightly
- 5. Fall sharply
- 9. I don't know

8. 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.?

- 1. Yes, it is the right moment now
- 2. It is neither the right nor the wrong moment
- 3. No, it is not the right moment
- 9. I don't know

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

- 1. Much more
- 2. A little more
- 3. About the same
- 4. A little less
- 5. Much less
- 9. I don't know

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

- 1. A very good moment to save
- 2. A fairly good moment to save
- 3. Not a good moment to save
- 4. a very bad moment to save
- 9. I don't know

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

- 1. Very likely
- 2. Fairly likely
- 3. Not likely
- 4. Not at all likely
- 9. I don't know

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

- 1. We are saving a lot
- 2. We are saving a little
- 3. We are just managing to make ends meet on our income
- 4. We are having to draw on our savings
- 5. We are running into debt
- 9. I don't know

Quarterly questions

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

- 1. Very likely
- 2. Fairly likely
- 3. Not likely
- 4. Not at all likely
- 9. I don't know

14. 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.)?

- 1. Yes, definitely
- 2. Possibly
- 3. Probably not
- 4. No
- 9. I don't know

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

- 1. Very likely
- 2. Fairly likely
- 3. Not likely
- 4. Not at all likely
- 9. I don't know

16. How do you expect the prices to change during the next 12 months?

- 1. Will rise 0-2%
- 2. Will rise 2-4%
- 3. Will rise above 4%
- 4. Decrease

General information

A. Average monthly income of your household:

(Please write down an approximate figure)

- 1. -----Lek in one month → go to question C
- 9. I don't know → Go to question B

B. Choose one of the intervals of income which includes the average monthly income of your household:

- 1. ALL 0 – 18 000
- 2. ALL 18 001 – 35 000

- 3. ALL 35 001 – 87 000
- 4. More than ALL 87 000

C. Sex of respondent

- 1. Male
- 2. Female

D. Age of respondent

- 1. 16-29
- 2. 30-49
- 3. 50-64
- 4. 65+

E. Education of respondent

- 1. Primary
- 2. Secondary
- 3. Further

F. Occupation of respondent:

(For details and concrete examples please refer to the guide)

- 11. Managers and professionals
- 12. Technicians and associate professionals
- 13. Clerical and support workers
- 14. Qualified employees of agriculture and artisans
- 15. Plant and machine operators and elementary occupations
- 21. Unemployed
- 22. Retired, disabled
- 23. Other occupations (student, other)
- 9. I don't know

G. Working regime of respondent

- 1. Full-time work
- 2. Part-time work

Annex 2. Classification of economic activities for business surveys

Table 1: Classification by strata of the industry sector firms

NACE code	Description
10	Processing of food products
11	Manufacture of beverages
12	Manufacture of tobacco products
13	Manufacture of textiles
14	Clothing
15	Manufacture of leather and related products
16	Manufacture of wood and products of wood, except furniture
17	Manufacture of paper and paper products
18	Printing and regrouping of recorded media
19	Manufacture of coke and refined petroleum products
20	Manufacture of chemicals and chemical products
21	Manufacture of pharmaceutical products and pharmaceutical
22	Manufacture of rubber and plastic products
23	Manufacture of other non-metallic mineral products
24	Manufacture of basic metals
25	Manufacture of fabricated metal products
26	Manufacture of computer, electronic and optical products
27	Manufacture of electronic equipment
28	Manufacture of machinery and equipment
29	Manufacture of transport equipment
30	Manufacture of other transport equipment
31	Manufacture of furniture
32	Other manufacturing
33	Repair and installation of machinery and equipment
Classification according to MIG (Main Industrial Groups)	
CDUR	Durable consumer goods
CNDU	Non-durable consumer goods
FOBE	Food industry
CONS	Consumer goods
INTM	Intermediate goods
IVE	Investment goods

Table 2: Classification by strata of the construction sector firms

NACE code	Description
41	Construction of buildings
42	Engineering activities
43	Specialised construction activities

Table 3: Classification by strata of the service sector firms

NACE code	Description
49	Land transport and pipelines
50-52	Water and air transport and storage
53	Post office and courier activities
55-56	Accommodation, food services and beverages
58-60	Publishing activities, movies, programs and distribution
61	Telecommunication
62-63	Information technology services
68	Real estate activities
69-72	Legal, accounting, enterprise management, architectural and engineering activities
72-74	Scientific research and development , publicity and other professional
77-82	Renting, employment, travel agencies, office administration activities
90-94	Creative , libraries, gambling, sports activities
95-96	Repair of computers and personal items

Table 4: Classification by strata of the trade sector firms

NACE code	Description
45	Wholesale and retail trade and repair of vehicles
473	Retail fuel trade
47	Retail trade

Annex 3. Treatment of outliers in quantitative questions

The questionnaires of the confidence survey generally contain qualitative questions. Businesses and consumers respond by choosing one of the given alternatives. In the CCS questionnaire, starting in May 2016, two quantitative questions have been added, on inflation expectations¹⁵. They are open-ended questions and the consumer fills in a number by which he estimates the current inflation and how much he expects it to change in the future. During the pre-treatment process of the responses from the May survey round, it was noted that the inflation expectations data had extreme values. These outliers were influencing significantly the mean of the inflation expectations series. Before further processing it was decided that the answers to this question should be cleared of outliers.

The classic treatment of finding outliers (and then eliminating them) is based on an interval around the mean: e.g. mean +/- constant * standard deviation. This formula is based on the normal distribution and the *constant* is a number that can take the value of 2, 2.5 or 3, depending on how much conservative we want to be¹⁶. In our case, it was noted that this method could not be used since the distribution of the perceived and expected inflation rates were not normally distributed but rather asymmetrically, and positively shifted (right). In the case of asymmetric distributions, both moments, the mean and the standard deviation are very sensitive to outliers, precisely those that they intent to identify.

When the distribution is not symmetric, the literature recommends that the mean should be replaced with the median (MED) and the standard deviation with the absolute deviation from the median (MAD). Both of these statistics have the advantage to be less vulnerable to outliers and the sample size. To determine the interval range around the median, MAD is multiplied by

¹⁵ CCS has a quantitative question as well; one on the capacity utilization rate compared to full capacity, but the treatment of extreme values is easier because of the nature of the question, the answers range between 0 and 100%. To avoid volatility from one quarter to another due to the occurrence of extreme values, the responses on capacity utilization rate below 10% are excluded from the aggregation, for industry, construction and services and 20% for trade.

¹⁶ Leyes, C. et al (2013): "Detecting outliers: Do not use standard deviation around the mean, use absolute deviation around the median".

a constant, k which measures how distributed the observations are¹⁷, $\{k = (Q3 + Q1 - 2MED) / (Q3 - Q1)\}$, where $Q1$ and $Q3$ are the values of the first and third quartile. This value ranges between -1 and 1 , depending on the positive or negative asymmetry.

In conclusion, before further aggregation of the question on inflationary expectations, only those responses which are within this range are to be considered:

$\{MED - 2.91 (1 - k) MAD \text{ MED} + 2.91 (1 + k) MAD\}$

In cases when the distribution may be normal, the median equals the mean and the value of the used constant takes the value of 0 . So the interval for the exclusion of the outliers returns to the classic formula: *mean \pm 1.96 * standard deviation.*

¹⁷ This is the same value used by INSTAT during the clean-up of data of Living Standards Survey from extreme values.

Annex 4. Confidence Indicators Charts

Chart 1. Economic sentiment indicator

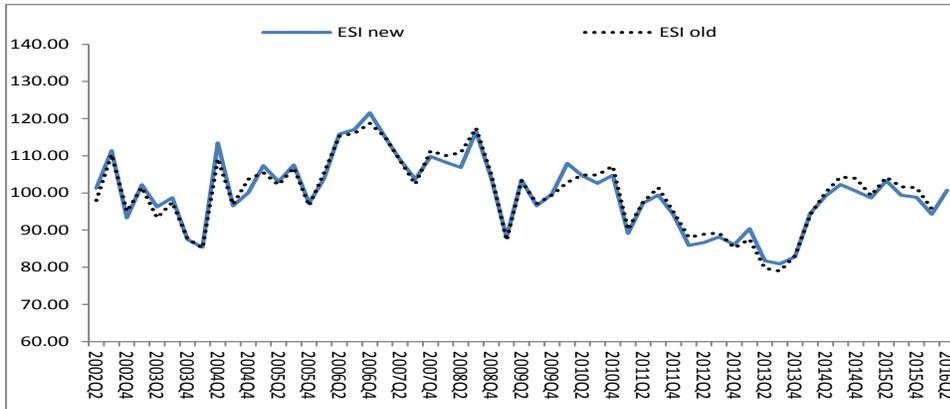


Chart 2. Industry Confidence Indicator (difference from long-term average, in brackets correlation coefficients with reference series)

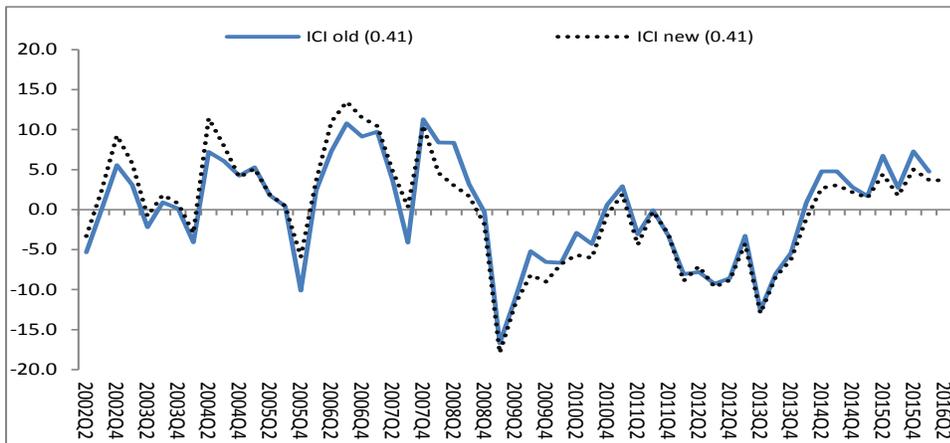


Chart 3. Construction Confidence Indicator (difference from long-term average, in brackets correlation coefficients with reference series)

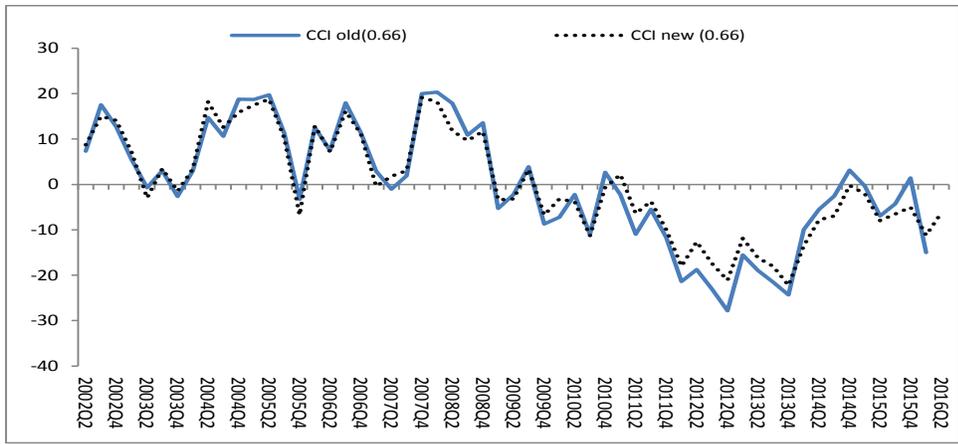


Chart 4. Services confidence Indicator (difference from long-term average, in brackets correlation coefficients with reference series)

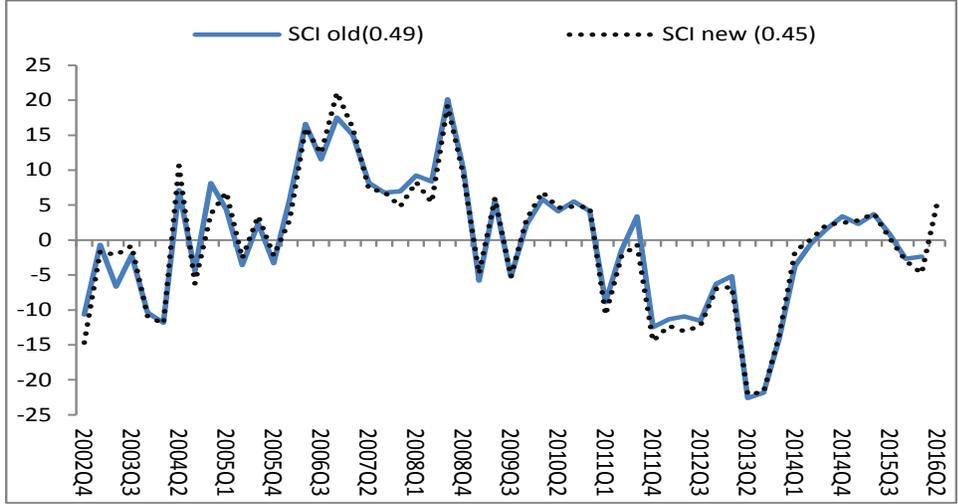


Chart 5. Trade confidence Indicator (difference from long-term average, in brackets correlation coefficients with reference series)

