NATIONAL BANK OF SERBIA

Methodology of the Bank Lending Survey

The National Bank of Serbia (NBS) has started conducting the bank lending survey in 2014. The methodology is aligned with surveys of euro area central banks, with slight modifications reflecting the specificities of the Serbian credit market. This ensures not only the application of the best international practice, but also data series that are comparable with data of other European central banks.

1. AIM OF THE SURVEY

By conducting the bank lending survey, the NBS aims to obtain necessary data to upgrade the analysis of trends in the credit market, and in particular to get an insight into the loan supply and demand factors from the banks' perspective. Together with interest rates and bank lending statistics, the qualitative information on loan demand and supply conditions, obtained from the survey, contributes to a more comprehensive estimate of trends in the credit market, and is in this context useful to all economic agents. Namely, the results of the survey provide a broad insight into credit market trends, notably whether they are determined by the supply/demand-side factors, as well as insight on the role of credits in the monetary policy transmission mechanism. This is of paramount importance for the central bank in terms of its monetary policy decision-making, but also for banks in terms of defining their credit standards and conditions for the coming period.

2. COVERAGE

Banks' participation in the survey is voluntary. The number of respondent banks is not the same for all questions since some banks operate only in particular segments of the credit market and therefore answer only questions which pertain to those segments. The survey covers 28 out of total 29 banks, which ensures almost full coverage in all segments of the credit market.

3. RESPONDENTS

The target group of respondents in banks are persons making decisions on credit conditions and are at the same time well-versed in the developments in a particular segment of the credit market. Filling in the survey questionnaire requires minimum effort from respondents.

4. CONFIDENTIALITY

The NBS guarantees absolute confidentiality of survey response data provided by individual banks.

5. DATA COLLECTION: QUESTIONNAIRE

The survey is conducted using a standardised questionnaire. The questionnaire contains ten qualitative questions about the changes in credit standards, conditions and demand and the factors behind those changes.

Questions are grouped in such a way that they cover bank credit relations with a) enterprises (E1–E5) and b) households (H1–H5). Questions are adjusted to the specificities of the domestic credit market, which are reflected primarily in the two-currency structure of loans. Questions relating to credit relations with enterprises are classified according to the size of loan beneficiaries (SMEs and large enterprises) and maturity (short- and long-term loans). Household loans are classified by purpose (housing, consumer and cash loans).

The last question is open-ended (O1) and the survey also envisages a possible additional question on topical issues (D1), when needed.

Individual questions are qualitative, multiple-choice, with one correct answer. There are five answer choices. The questions relate to changes in the previous quarter and to changes expected in the next quarter.

6. DYNAMICS

The questionnaire is completed four times a year, within the first ten days of each quarter – in January, April, July and October. To illustrate, if a respondent completes the questionnaire in January, the previous quarter covers the period from the beginning of October to the end of

December, while the subsequent quarter covers the period from the beginning of January to the end of March.

7. AGGREGATION OF RESPONSES

The methodology for aggregating individual qualitative responses to the survey questions explains how to convert qualitative answers to multiple-choice questions into numeric values. The answers to each question are summed up by use of two alternative indicators: the net percentage and the diffusion index.

The main difference between the two indicators lies in assigning numeric values to qualitative answers. Given that respondents answer by selecting one of the five options, the answers to each of the five options must be converted into numbers through assignment of numeric values ranging from -1 to 1.

In case of the net percentage, there is no difference between extreme and moderate responses. This is because it is simpler for a respondent to assess the direction than intensity of the change. Therefore, the difference between "somewhat" and "considerable" may be somewhat subjective. Hence, the same numerical value is assigned to extreme and moderate responses, and a zero (0) to responses indicating no change.

Loan supply	Loan demand
1= Tightened considerably	1= Increased considerably
1= Tightened somewhat	1= Increased somewhat
0= Remained basically unchanged	0= Remained basically unchanged
-1= Eased somewhat	-1= Decreased somewhat
-1= Eased considerably	-1= Decreased considerably

Diffusion index is an alternative measure for the statistical analysis of survey results.

Basically, diffusion index is a net percentage which makes a difference in the intensity of responses. As a respondent chooses one of the five options, the responses to each of the five options are converted into numbers by assigning to them numerical values in the range from -1 to 1 as follows:

Loan supply	Loan demand
1= Tightened considerably	1= Increased considerably
0.5= Tightened somewhat	0.5= Increased somewhat
0= Remained basically unchanged	0= Remained basically unchanged
-0.5= Eased somewhat	-0.5= Decreased somewhat
-1= Eased considerably	-1= Decreased considerably

Weighting of the results. For the sake of representativeness, individual banks' responses are linked to their respective shares in the credit market – the larger the bank's share in the credit market, the larger the weight applied to its answer. Therefore, size weights are used in the aggregation of individual responses. Banks' shares in respective segments of the credit market are used as size weights. Thus, taking into account only the market segment covered by the question (e.g. short-term FX loans to enterprises, dinar housing loans to households etc), the appropriate statistical representativeness is attained.

In case of weighting, the net percentage (*NP*) and the diffusion index (*DI*) for the market segment *k* represent the sum of weighted numerical values assigned to qualitative responses:

$$NP_{к} = \sum_{i=1}^{n_k} V_{ik}\, P_{ik} 100$$

$$DI_{к} = \sum_{i=1}^{n_k} V_{ik}\, P_{ik}$$

where $\sum_{i=1}^{n_k} p_{ik} = 1$

V_{ik} – numerical value from -1 to 1 depending on the response of the bank *i* to the question relating to the segment of the credit market *k*;

P_{ik} – weight of the bank *i* in the segment of the credit market *k*; and

$n_{к}$ – number of banks participating in the survey and operating in the segment of the credit market *k*.

The net percentage may range from -100 to 100, and the diffusion index from -1 to 1.

A response from a bank that is not active in a particular segment of the credit market will not affect the value of the aggregated response as this bank will not have a weight for the market segment concerned. If the bank starts granting loans in a particular market segment, its responses for that segment of the market will be given equal treatment in the process of aggregation.

If survey results are needed for two or more individual segments of the credit market, aggregation is performed by applying the weighted average.

Updating of weights. Weights are updated on a quarterly basis, for each survey, based on the latest available data on the stock of gross loans (January survey – end-November data; April survey – end-February data; July survey – end-May data and October survey – end-August data).

Table 1 illustrates the application of weights to different market segments by survey questions. Tables 2–16 present the structure of weights and bank shares in the credit market, by segment, with the stock of gross loans as at end-October 2013.

8. INTERPRETATION OF RESULTS

Aggregated results of the bank lending survey are usually disclosed in the form of net percentage, while some central banks also use the diffusion index.

As regards credit standards and conditions, net percentage is the difference between total weighted share of banks reporting "tightened considerably" and "tightened somewhat" as their dominant response and the total weighted share of banks reporting the two opposite responses ("eased considerably" and "eased somewhat"). Positive value of the net percentage indicates net tightening, and negative – net easing of credit standards and conditions.

As regards the factors affecting credit standards/terms, net percentage is the difference between total weighted share of banks responding that a given factor contributed to the tightening of credit standards/terms and total weighted share of banks responding that the same factor contributed to their easing.

As regards demand for loans, net percentage is the difference between total weighted share of banks responding that the demand "increased considerably" and "increased somewhat" and the weighted share of banks responding that it "decreased considerably" and "decreased somewhat". Hence, positive value of the net percentage indicates a net increase and negative – a net decrease of demand.

Interpretation of the diffusion index follows the same logic. If the question relates to credit standards/terms, a diffusion index above zero indicates tightening, whereas a diffusion index below zero indicates easing. This applies also to questions on demand for loans.

9. RESPONSE BIAS

Response bias in the form of excessive optimism or pessimism can occur and should be taken into account when interpreting survey results. Respondents can be systematically too optimistic or too pessimistic. Constant excessive optimism or pessimism can be adjusted by comparing the gap between the net percentage and its long-term average, rather than by comparing the gap between the net percentage and the zero level.

10. SEASONALITY

Even though the questionnaire asks the respondents to adjust their responses for seasonal fluctuations, time series of the net percentage from the bank lending survey can show seasonality. Systematic checking of seasonality is therefore recommended.

11. PUBLISHING OF THE RESULTS

The results are published in the second month of the quarter (February, May, August and November).

The results are disseminated through the following channels:

1. excel base of aggregated data on the NBS website;
2. quarterly analysis of the results in the Report on the Results of the Bank Lending Survey (incl. relevant tables and charts);
3. Inflation Report, Financial Stability Report, Monetary Policy Report, Financial Stability Report and;
4. working papers, etc.