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SOME FEATURES IN BANKING STRESS TESTING

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Abstract: The article presents the stress testing procedures as a general approach to risk assessment in banking.

Keywords: banking, stress, testing.

In recent years, in the general approach to risk assessment, stress testing procedures were among the first. The point is that it is important not only to measure the size of one or another risk but to determine the type of the corridor of the permissible risk. The reason is that in a mixed and complicated (financial) situation, the overall level of risk does not go beyond the boundary. Thus, by conducting stress testing in one or another direction of activity, the bank creates a certain amount of *liquidity risk, market risk or other risk*.

Stress testing of liquidity risk is an extremely important task in the risk prediction procedure. At present, the risk of current and potential liquidity is withdrawn from the list of most threatening and dangerous risks, as banks have learned to calculate this risk and to manage it. This cannot be said about the credit risk. However, when the situation on the liquidity market is out of control and there is no possibility of obtaining additional funds on the interbank credit market or other liquidity-providing channels, the risk of losing liquidity appears to be the most serious. In order to prevent this, it is necessary to maintain the liquidity that will enable the bank in case of force majeure not to suffer.

The question arises *what to do to confirm the bank's creditworthiness with respect to liquidity risks?*

This task should be decided individually by each bank and by each analyst involved in risk prediction.

Different approaches are possible, allowing the bank in certain extent to insure itself from unusual situations¹.

¹ Воронин Ю.М., Управление банковскими рисками, М., 2007.

Stress testing is performed on the mobile part of the residual funds of the client funds in relation to the potential leakage of the bank's residuals using the historical modeling method "VaR". The depth of the calculation is made one year from the time of the analysis, and the analytical unit for conducting the measurement is one day. The size of the alpha-acceptable range is taken from 90 to 99%, i.e. with a probability of occurrence of the event from 10 to 1%.

The results of the analysis are presented in a tabular form: for the worst case scenario (probability of the event - 1%), for the standard scenario (probability for the event - 5%) and for the "soft" scenario (probability for the event - 10%).

Credit stress- testing is conducted for the bank's loan portfolio in the sense of deterioration in the credit quality and hence the probability that some of the assets will not be recovered.

With a certain probability, a stress model is predicted for one or the other meaning of "suspicious loans", for example, the fourth category of quality of loans are equal to range between fifth and half to third, the fourth category, the half of the second category is equal to the third and so on. According to this model, the potential size of the reserve in case of possible losses of the assets and the influence of the given importance on the size of the bank's financial operations are estimated. The fifth category is considered irreversible and it is also taken into account in bank's liquidity risk stress testing.

Stress testing of stock risk (prices) is done on a number of bids, but securities stress testing are done according to the parametric VaR method. The model has a "critical" significance of volatility that exceeds the significance of the volatility of bonds and shares of leading issuers (for example during the crisis of September 2008 to March 2009). Suppose the critical instability range is from 0.05 to 0.09. It is assumed that 0.05 is the "softest" option and 0.09 is the worst option for event development. Summarizing the importance of VaR is the critical stress loss for each particular type of securities. Final losses are considered VaR's portfolio, taking into account the correlation of separately taken elements.²

The stress currency risk test is carried out on several curves of instability of the exchange rate using the parametric VaR method of the stress-testing algorithm.

Stress testing of the interest rate changing risk, in our opinion, can take two main directions: first, stress-testing the interest rate risk in terms of detecting the most vulnerable horizons, and secondly, stress- testing the interest rate risk in terms of detecting the maximum impact on the financial performance of the Bank.

In the first case, the GAP analysis of the assets and liabilities of the bank is a calculation method. Modeling is an assumption for the symmetry of the movement of the interest rate regardless of the type of financial instrument. The basic rate is the refinancing rate. The range of critical variations is 2-5% and more of the same movement. The summary of the differences in the set parameters will be the result of stress testing.

In the latter case, the method of calculation is an integral method for estimating the significance of the bank's net-percentage margin. The range of critical variations is from 2-5% and above. The aggregate significance of the absolute change in the net percentage margin adjusted for annual calculation and is the result of stress testing.

Any bank manager is interested from bank analytical departments to obtain shortest, clear and comprehensive information about the financial situation. It can be assumed that in the area of risk, the bank's management is primarily interested in a state of risk - whether it is high, whether it is balanced, has a negative tendency to increase or positive downward trend, etc.³.

The solution to such a task is possible if numerical parameters are introduced that would characterize the entire spectrum of risks. In order to produce such an aggregate parameter, it is

² Шапкин А. С., Шапкин В. А. Экономические и финансове риски. Оценка, управление, портфель инвестиций. М., 2008.

³ Чернова, Г., Кудрявцев, А., Управление рисками, М., 2006.

necessary to set a number of parameters that, in the opinion of many analysts, describe the state of risks of the bank.

For example, the credit risk for a bank can be taken. We define a set of indicators that in our opinion are most characteristic of the given type of risk:

- The size of loans with a sensible quality (difficulty 3);
- The size of the hopeless loans (difficulty 3);
- The assessment of the diversification of the deposit (difficulty 2);
- Assessment of the level of deposit reserves (difficulty 3);
- Assessment of the risks from the concentration of large credit risks (weight 2);
- Assessment of risk from concentration on credit risk by shareholders (weight 2);
- Assessment of the concentration of credit risks by insiders (issuers) (weight 2);
- An estimate of sectoral diversification (weight 2);
- Estimation of stock diversification (weight 2);⁴

Hence, it is possible to determine the weight of the indicators according to their importance in the aggregate indicator.

The total weighted average at given date will reflect the current credit risk.

Based on aggregated indicators for different types of risks, a single indicator of a summed risk level for the bank as a whole can also be obtained. To that end, it is necessary to take into account the available aggregated risk indicators and obtain a composite risk assessment indicator. Similarly, indicators for different types of risk (liquidity, market, currency, interest rate, operating) can be constructed.

All results obtained should be provided by the analytical department and discussed by the bank's management. The collective decision of the executive board, after such discussion, is the main product that analysts should constantly have on mind in making their estimates and methodologists in preparing guidelines and positions for managing banking risks.

Great significance has monitoring the quality of the bank's risk management system, since any audit by the supervisory authorities will reveal the results of a similar monitoring and give it an appropriate estimate. A bank that independently tests the available risk management system significantly reduces the systemic risk, the risk of what, regardless of the local control of separate activities, as a whole, does not have a properly built system that would allow for the detection and removal of bottlenecks in managing bank risks.

By controlling one or another type of risk, the risk management department should list all the important procedures and events relevant to that type of risk. Furthermore, it is possible to conduct a self-assessment in what extent the bank meets the requirements of the internal regulations. If the answer is generally positive or satisfactory, it can testify to good or satisfactory quality of risk management. In the event of unsatisfactory or questionable answers to the questions, it makes sense for the bank to pay special attention to the gaps and to remove it in the shortest possible notice.

I propose an option for a *procedure* by specifying specific questions that an expert analyst should answer in order to obtain information on the quality of financial risk management in a bank.

Procedure / procedure for answering questions for assessing the liquidity risk management

Is there a department (assistant) responsible for assessing the liquidity risk in the bank?

Is this department (assistant) dependent on market structures?

Are there internal documents (rules, methodologies) related to liquidity risk management?

Have these documents been validated by a person who meets the requirements?

⁴ Чернова, Г., Кудрявцев, А., Управление рисками, М., 2006.

- Is there a policy of liquidity control and management in the bank?*
- Is there a constant assessment of the liquidity risk in the bank?*
- Does the Bank conduct a regular analysis of the liquidity situation and assessment of the mandatory liquidity standards?*
- Are liquidity forecasts made to the bank?*
- Is the bank, in essence, independent of the attracted short-term interbank lending?*
- Is there a record of managing the amount of liquidity risk in the bank?*
- Is this notification a permanent basis for managing the bank?*
- Are there delays in customer payments in the bank?*
- Is there developed bank procedures and mechanisms for stress testing of the liquidity situation by reporting the likelihood of granting larger amount of loans, non-collapse of large loans, simultaneous outflow of funds from LORO accounts, from payment accounts of large clients and deposits of individuals, or other significant cases for the bank?*
- Is there a procedure for self-assessment of the management of liquidity risk with internal regulations?*
- Procedure for response to credit risk management*
- Does the bank control the level of credit risk for each borrower and for the bank as a whole?*
- Does the bank's management receive information on the results of the monitoring of the internal control system?*
- Is there a Loan Commission in the Bank (Asset, Liability and Risk Management Committee)?*
- Is there a department (or assistant) responsible for assessing the level of credit risk the bank has taken?*
- Is there a conflict of interest between market and analytical structures?*
- Is the department (associate) independent of the bank's structural units that performs operations and is subject to credit risk?*
- Are internal regulations (rules, methodologies) for credit risk management developed?*
- Have these acts been confirmed by a person who meets the requirements?*
- Is there a record of managing the level of credit risk in the bank?*
- Does the bank have a system for limiting deposits?*
- Response procedure for risk-related issues for market risk (shares)*
- Is there a department (assistant) responsible for assessing the risk of the bank reserves?*
- Is this department (associate) independent of market structures?*
- Are internal regulations (rules, methodologies) for risk stock management developed?*
- Have these acts been confirmed by a person who meets the requirements?*
- Are the restrictions on investing in securities determined by the bank and are these restrictions observed?*
- Is there a permanent assessment of the bank's stock risk?*
- Does the bank analyze the stock situation and give relevant recommendations to dealers?*
- Does the Bank analyze the indicators of the state of the economy and the stock market?*
- Does the Bank maintain a database of indicators on the financial market?*
- Is the market risk appropriately calculated in accordance with the Central Bank regulation?*
- Is there a report on managing the size of the market risk in the bank?*
- Is this notification a permanent basis for managing the bank?*
- Are the issues of risk management in the internal market of the bank related to the bank?*
- Has the Bank established a self-assessment procedure for market risk management?*

A response procedure for questions related to the assessment of currency risk management

Is there a department (assistant) responsible for assessing the currency risk in the bank?

Is this department (assistant) independent of market structures?

Are internal regulations (rules, methodologies) for currency risk management developed?

Have these acts been confirmed by a person who meets the requirements?

Are the limits on foreign currency positions opened during the business day in the bank?

Have internal regulations been established for establishing a procedure for controlling the central office for open foreign currency positions in subsidiaries in the bank?

Are there currency limits on foreign exchange positions that are authorized to open the employees in the structure of trading?

Is the bank the level of losses after which the foreign exchange position is closed?

Does the Bank have constant control over the amount of the foreign currency position?

Has a risk assessment been carried out by a bank?

Is this assessment persistent?

Does the bank analyze the assessment of the situation on the foreign exchange market with relevant recommendations for dealers?

Is there a record of managing the currency risk in the bank?

Is this notice regularly available to the bank's management body?

Is there a Bank's self-assessment for currency risk management?

Response procedure for questions of interest rate risk management

Is there a department (assistant) responsible for assessing the interest rate risk in the bank?

Is this department (assistant) independent of market structures?

Are internal regulations (rules, methodologies) developed for managing the interest rate risk?

Have these acts been confirmed by a person who meets the requirements?

Are the interest rates set in the bank determined?

Have these restrictions been met?

Does the Bank conduct a continuous assessment of interest rates?

Does the bank analyze the state of the economy and the situation on the financial market in order to predict the dynamics of interest rates?

Does the bank have a managerial record of the size of the interest rate risk?

Is this notice regularly available to the bank's management body?

Does the Bank have a self-assessment for managing the interest rate risk?

Procedure for response to operational risk assessment issues

Is there a department (assistant) responsible for the assessment of operational risk in the bank?

Is this department (assistant) independent of market structures?

Are internal regulations (rules, methodologies) for operational risk management developed?

Have these acts been confirmed by a person who meets the requirements?

Have the principles of operational risk management been developed in the bank?

Are there internal regulations of the Bank for the procedure for assessment of operational risk?

Does the bank insure buildings and other assets, information and media?

Are the measures taken by the bank capable of storing and restoring information systems?

Does the Bank assess the operational risk?

Does the bank keep an analytical database of sustained operating losses in a risk situation, allowing to reveal the most vulnerable from the point of view of operational risk areas?

Does the bank have internal reporting by the structural departments for collecting information on operating losses?

Has a bank established a system of indicators for the level of operational risk used in its monitoring?

Does the probable size of operating Bank losses predicted in advance?

Does the Bank report on the results of operational risk monitoring?

Is there a procedure for self-assessment of the operational risk management in the bank?

As a result of these estimates, a particular aggregate consisting of separate components can be obtained. In addition, certain answers can be assigned to each issue, according to their assessment by the management. For example:

- 1. yes, always;*
- 2. yes, basically;*
- 3. yes, partly;*
- 4. yes, sometimes;*
- 5. yes, insignificant;*
- 6. no*

In addition, each issue may have a specific importance that the analyst should determine independently on an expert basis, in communication with the management of the bank. Thus, the aggregate indicator for the quality of the bank's risk management system is calculated using the formula:

A - answer from 1 to 6 x the significance of the responses

X – multiplied / - divided

From this, it can be concluded that, the smaller the aggregate significance of the indicator, the greater the quality of the bank's risk management system and vice versa, the higher the aggregate significance of the indicator, the lower the quality of the risk management system of the bank.

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