

Bank`s operational and risk problems

Dimitar Anastasovski

University of agribusiness and rural development, Bulgaria

Abstract: The paper discusses the risks in the bank and the associated operational problems. A simplified map of the different types of operational risks is presented. Additionally, the reasons causing risks for a bank are examined. GAP analysis is outlined as a key key instrument for analyzing the potential risks to liquidity and some important recommendations are made regarding the calculations of the remnants of client funds. Main conclusions focus on the construction of variants of different scenarios of the bank's liquidity circumstances and the determination of the vulnerability of the bank to the parameters for the "crisis".

Keywords: bank, risk, probaem, GAP analysis.

Operational and liquidity risks are the most dangerous according to their unpredictability and consequences. They, together with new types of risks that are emerging such as environmental risk¹, are complicating modern risk management. It should be underlined, as Kitanov points out, that the more risks are undertaken the higher the expected returns². This is the underlying reason behind risk taking. Operational risk can manifest itself practically everywhere in the activity of the bank, while liquidity risk arises primarily as a result of the credit portfolio of the organization. The credit portfolio is the total volume and structure of bank loans³. Both liquidity and operational risk are types of non-systemic risk⁴.

By its nature, any not recorded risk in the bank might be associated with operational problems. More precisely, operational problems are considered as associated with:

- *technical malfunction risks* – related to processing of technical devices, programs and systems due to internal or external circumstances;
- *program wrong setting risks* – when program is processing correctly, but report`s results are wrong;
- *risks from problems arising from human factor activities* - implementation errors, insufficient training of staff, etc.;
- *risks of violation of the deadlines for providing internal and official bank accounts due to various factors;*
- *risks of interrupted interaction among bank`s departments;*
- *risks of interruption of the internal and external circulation of bank documents;*
- *risks associated with new banking activities;*
- *risks associated with poor policy implementation of bank employees;*
- *risks of offensive behavior of bank employees and external organizations;*
- *risks of force majeure/vis major* (fires, floods, war, coup d`etat, terrorist acts, etc.).

The bank may also detect other types of operational risks.

Operational risks at this stage are the least well studied area of risk and there are practically no methods for calculating the value of risk significance.

¹ Zhelyazkova, V. Levels of Environmental Risk Management in Universal Banks. Ecology & Safety ISSN 1314-7234, Volume 10, 2016, p. 480.

² Kitanov, Y. Portfolio Investment Risks: Typology and Mitigation. Economy & Business ISSN 1314-7242, Volume 10, 2016, p. 332.

³ Stoichkova, O., Kitanov, Y. Banking. VUZF Publishing House, 2010, p. 40.

⁴ Kitanov, Y. Investment Management Fundamentals. VUZF Publishing House, 2016, p. 80.

In this regard, the question is how to assess and manage operational risk?

According to a certain opinion, the goal is to use an analog method. In this context it is necessary:

First, to record all previous cases of operational risks. They should be documented for each type in a separate database and publish a calendar of operational problems in the bank, generally every day, describing the event, the reasons for the occurrence, actual amount of losses incurred by the bank.

Second, the calendar data for an operational case should be summarized to see how many problems have been caused by one or another risk, the frequency of their occurrence, the amount of hypothetical and real losses in their occurrence. This creates a "Operational Risk Map".

An example and simplified map can be as follows:

Types of operational risk	Description of the specific event	Reason for the problem	Quantities (No. of) and cases	Maximum losses
Risks of technogenic character due to internal and external factors	Problems in server performance	Problems in server performance	5	None
Risks of inaccurate programming programs when programs work well, however, the results are untrue.	Incorrectly installed one of the programs of the automated banking system	The result is a false official responsibility data	3	60000 Euros
Human Factor Risks	Erroneous Client Assets Operations	Operator Error	1	The client goes to another bank. Loss of 600,000 Euros
Risks from breaking deadlines for providing internal and official bank accounts due to various factors	The report is presented with a delay of 5 days	Different types and sets of circumstances	2	Fine in the amount of 450000 euros
Risks of mutual interference among bank's departments	no	no	no	no
Risk of wrong doing in internal and external flow of bank's documents	no	no	no	no
Risk related to introduction and performing new bank operations	no	no	no	no
Risk related to the bank HR policies	no	no	no	no
Risks of unlawful activity of the bank employees and external organizations	no	no	no	no
Extraordinary circumstances (fires, floods, war, coup d'etat, terrorist acts, etc.)	no	no	no	no

Depending on the size of the actual or hypothetical loss of one or another risk, a certain "danger hole" is granted. For example, all operational risks can be divided by a six-digit "hazard scale":

- 6 - maximum dangerous operational risks;
- 5 - Significant operational risks;
- 4 - dangerous operational risks;
- 3 - not very dangerous operational risks;
- 2 - permitted hazardous operational risks;
- 1 - practically safe operational risks.

The responsibility for operational risks is relatively easiest to present in the following:

Map of operational risk - allows management to see clearly which risks in the bank are most dangerous and likely to occur;

- Statistical report - detailed depicting on which risk, with what probability is manifested and what are the expected losses from the given risk;
- Recommendations - actions that allow management to adopt solutions for complex events aimed at minimizing one or another risk.

It is advisable, in our opinion, that the bank should create a reserves in relation to operational risks for possible losses (for example, the actual loss at the end of the year or the average loss for a certain period).

It is not advisable to use estimates of expected losses leaning on methods of statistical analysis, such as actual VaR (value at risk), due to the significant time gap in bank statistics, and sometimes even complete absence of such data. The data of other banks, including those in the world, are not appropriate to use, since each bank's activity has its own specificity.

Liquidity risk is practically the most dangerous, in general, for banks and the banking sector. It is enough to recall the global financial crisis of 2008 that initially hit US banks, and then, as a chain reaction, spread to almost all countries

What is the reason for causing such a risk?

The demand for higher profits under the "win more" principle does not stick to risk management problems, and the bank's management does not pay attention to the ideas offered by analytical department.

When does the risk of liquidity occur?

We will look at four major schemes for possible financial flows in one bank:

- The Bank attracted a short-term liability (liabilities) and placed it in short-term assets (assets);
- The Bank attracted long-term liability (liabilities) and depreciated it in short-term assets (assets);
- The Bank attracted a long-term liability (liabilities) and depreciated it in long-term assets (assets);
- The Bank attracted a short-term liability (liabilities) and depreciated it in long-term assets (assets);

The first option. The bank drew a short-term commitment and deployed it in the first option. The depositor pays the bank 100,000 EUR a year with a 5% annual interest. The Bank then provides these funds to a legal entity loan for 10 months with a 12% interest rate. After 10 months, the bank received 100,000 EUR from the legal entity and 10,000 EUR as interest. After 12 months, a depositor comes to the bank and receives 100,000 Euros and deposit interest 5,000 EUR. The deposit did not appear any problem, and moreover, the bank earned 5,000 EUR.

Second option. The depositor pays the bank 100,000 EUR a year with a 5% annual interest. The Bank then provides these funds in a legal entity loan for 2 months with a 12% interest rate. This situation is normal from the point of view of liquidity, but not in terms of profitability. For 2 months, the bank will receive 100,000 EUR from the legal entity and 2,000 EUR as interest. After 12 months

the user of the Customs warehouse comes to the bank and receives his 100 thousand EUR and interest in the amount of 5000 EUR. There is no problem with the deposit, however, the bank has not won anything, and even paid the client 3,000 EUR.

Third option. The user of the customs warehouse inserts into the bank 100,000 EUR for 2 years at 5.5% annual (simple) interest. Afterwards, the bank provides these funds on credit to a legal entity for 2 years at 12% annual (simple) interest. This situation is normal from the point of view of liquidity, but not in terms of profitability. After two years, the bank receives 100,000 Euros from the legal entity and interest on the loan - 24 thousand Euros. After two years (on the day of maturity) the bank returns to the user of the Customs warehouse 100,000 EUR and interest of 11,000 EUR. The deposit has no problem, and the bank has also earned 13,000 EUR.

The fourth option. The depositor's bank loan is 100,000 EUR per year with 5% annual interest. The Bank then provides these funds in a legal entity with a loan for two years with a 15% annual (simple) interest. This situation is unacceptable from the point of view of liquidity, but it is the most attractive in terms of profitability. One year the client should receive the money and the interest from the bank, but the bank answers that there are no money, but will have one year later. There is a breakdown (GAP from English - jump, split) into liquidity of 100,000 EUR per year.

If the client agrees to wait another one year, then the bank will realize the maximum profit of the possible 25,000 euros. However, this situation testifies that the bank faces serious problems and in the presence of a cumulative GAP bankruptcy occurs.

Of the four options, the third option is optimal - the scheme according to which the bank attracts long-term liabilities and puts it in the most profitable long-term assets. A safer, but less profitable option occurs when the bank, which has short-term liabilities, invests in short-term assets. Acceptable from the point of view of liquidity, but often does not provide any income, is the scheme for attracting long-term liabilities and putting them into short-term assets. Absolutely unacceptable, from the point of view of liquidity (liquidity should always be a priority over the yield), is a scheme for attracting short-term liabilities and their subsequent retention in long-term assets.

As a key instrument for analyzing the potential risks to liquidity, according to our opinion, is the so-called GAP analysis. The GAP analysis determines the difference between the means and the obligations that lie at the same time interval. The time intervals used are usually standard, namely: up to 30 days, up to 90 days, up to 180 days, up to 365 days, from 1 to 3 years, 3 years and more, or not specified.

The GAP calculation (disagreement) at all time intervals and recording the magnitude of this disagreement results in a GAP analysis.

Assets and Liabilities per period (in thousands of EUR) (variant)

Indicator	Up to 30 days	30-90 days	91-180 days	181-365 days	1-3 years	More than 3 years
Assets	4 500 000	2 000 000	1 500 000	500 000	3 000 000	500 000
Liabilities	4 500 000	2 000 000	1 000 000	1 000 000	1 000 000	2 500 000
pure GAP	0	0	500 000	-500 000	2 000 000	-2 000 000
GAP (growing result)	0	0	500 000	0	2 000 000	0

As such, pure GAP is a hardly measurable figure, but GAP (a growing result) is a magnitude that reflects the true state of the credit institution's liquidity business, not just in it, as the method applies to all incoming and outgoing financial flows.

In the case under review, the GAP analysis indicates that the bank has no liquidity problems at any time, since GAP is always positive or zero. If there is room for negative GAPs in one or another period, then the assistant to the liquidity risk officer should give recommendations on how much and how much time it takes to attract additional sources of funds.

The GAP analysis can be a passive (passive evolutionary method), as well as in the example given when the analyst takes into account only the actual terms of repayment recorded in the relevant agreements. Another variation of GAP analysis, the so-called dynamic GAP analysis, is possible when the analyst takes into account the actual repayment dates that are known in advance and determined in advance, but differ from the agreed deadlines, while the estimates take into account the new requirements for allocating the fund and the inflow of new liabilities.

Another thing worthy of attention is also that the GAP analysis should be considered when calculating GAP "on demand". It is not difficult to understand that when calculating the Assets, the so-called "highly liquid assets - NOSTRO accounts" are accepted in the "assets based" calculations as working part of the treasury, one-day interbank loans placed; but "Liabilities" - accounts of LORO correspondents, borrowed one-day interbank loans, funds "on demand".

The GAP analysis data will not reflect the true condition, if all remaining assets in the current client accounts are used in the GAP analysis calculations as liabilities-liabilities "on demand". It is difficult to assume that during the business day all bank customers will simultaneously withdraw the rest of their funds into their current accounts. If such a situation arises, it is caused by force majeure/"vis major". The probability that this will not happen is estimated at 99.9999%, which leads to a question

How to take into account in the calculations the remnants of client funds?

The recommendations in this case may be the following.

The analyst collects information about the daily movement of residues in the accounts "on demand" for a sufficiently long period (preferably from one year to one year and a half).

It is necessary to take into account the possibility of optimizing the liquidity risk. As it is known, the basic principle of the bank is more to win, without creating a problem with customer remittances. It is therefore appropriate to compile the report on the bank's liquidity situation together with the bank's profitability report in the breakdown by deadlines. The report on the liquidity situation will allow to model different situations for the state of the level of profitability and the level of liquidity. The report is often referred as "fundraising matrix", in which the horizons are reflected in assets allocated according to the conditions and correspond to the rates according to the conditions and the vertical - the liabilities allocated according to the deadlines, i.e. the time limits. Such a form of liability also reduces the risk of inadequate returns.

For banks that support a conservative liquidity management policy, it may be advisable to prepare a report setting up an optimum map for the distribution of banks' liquidity. The specific coefficients that will transfer their liabilities to the property will help build an optimal liquidity card for the bank. An example of such a liquidity card is listed in the table.

Bank liquidity map (in thousands EUR)

Limited assets	Limit of deposits	More than 365 days	181 – 365 days	91 – 181 days	31 – 91 days	By demand and up to 30 days
By demand and up to 30 days	359 408	0	0	0	20%	100%
31 – 91 days	25 664	0	%%	!0%	80%	0
91 – 181 days	24 151	5%	15%	20%	0	0
181 – 365 days	80 999	15%	80%	70%	0	0
More than 365 days	128 000	80%	0	0	0	0
Whole assets	618 222	100%	100%	100%	100%	100%
Whole liabilities	618 222	160 000	1 711	79 472	22 039	355 000

The Liabilities - obligations table is displayed horizontally and the asset-working assets are vertical. Additionally, the coefficients for calculating the liabilities-liabilities in the assets-operating

assets are determined. This option should be used in organizations with a conservative policy in the field of liquidity management.

In order to predict the most favorable situation in the sphere of liquidity and to evaluate the retired from the stability of the bank it is advisable to maintain "stress testing". As basic prediction parameters, for example, might be used data for the remaining assets after the deadline "by request" payments from the customer accounts. We have previously referred to the "movable" part of the remnants of the funds for paying the bills and so calls for a minimum, which in ordinary settlements is accepted to refer to the long-term part of the liabilities. However, in anticipation of a possible crisis, it is appropriate to create different scenarios, including scenarios for reducing the remnants of current accounts to a "minimum" for a certain period, and to withdraw a significant portion of the deposits of individuals.

In conclusion, it may be advisable to construct several variants of the "worst" scenario of the bank's liquidity circumstances based on different scenarios and, accordingly, to determine the vulnerability of the bank to the parameters for the "crisis".

References

1. Arsov, Dragoljub., Rizici vo bankarskoto rabotenje, Skopje 1998.
2. Assenova, M. Stock exchanges Electonic edition, Publishing House "Talent", UARD, ISBN 978-619-7048-65-0.
3. British Banker's Association, International Swaps and Derivates Association and Robert Morris Associates (2000), Operational Risk Management – The Next Frountier, The Journal of Lending & Risk Management, March.
4. Davkov, Igor, Metodologija za utvrduvanje na stabilnosta i efikasnosta na bankite i nejzina primena vo bankarskiot system na R Makedonija, Skopje, 2000.
5. Georgiev, G. Bank Risk Management. Publishing House Faber, 2012.
6. Kitanov, Y. Investment Management Fundamentals. VUZF Publishing House, 2016.
7. Kitanov, Y. Portfolio Investment Risks: Typology and Mitigation. Economy & Business ISSN 1314-7242, Volume 10, 2016.
8. Rizik likvidnosti u poslovnoj banci (2004), Zbornik Pravnog fakulteta Sveucilista u Rijeci, Vol.25, broj 2, Rijeka: Pravni fakiltet.
9. Saunders, A., Cornett, M., M., (2003), Financial Institutions Managment, Boston: McGraw-Hill Irvin.
10. Stoichkova, O., Kitanov, Y. Banking. VUZF Publishing House, 2010.
11. Vidolova, M., Banking risk - Risk in the banking sphere - essence, elements, characteristics. Methods of analysis and management, C, 2012, Publishing House. Infinity creative.
12. Zhelyazkova, V. Levels of Environmental Risk Managemetn in Universal Banks. Ecology & Safety ISSN 1314-7234, Volume 10, 2016.