

ANALYSIS OF CREDIT RISK BASED ON FINANCIAL STATEMENTS AS THE DECISIVE FACTOR INFLUENCING THE RISK OF INVESTORS

Nada Milenković*

Faculty of Economics Subotica, Serbia
nadam@ef.uns.ac.rs

Miloš Pjanić

Faculty of Economics Subotica, Serbia
milospjanic@ef.uns.ac.rs

Siniša Ostojić

Faculty of Economics Subotica, Serbia

ABSTRACT

Banks as the key subjects in the financing of investment have a strong influence on the risk of investors, hence the solvency of the bank is of crucial importance for the risk management in the investment process. Given the fact of underdevelopment of financial markets and the lack of trading activities in securities, it is evident that the investments of banks in developing countries mostly include lending investments. Looking at the key categories of risk that influence the overall risk of the banking business in such conditions, it can be concluded that credit risk presents the dominant and decisive factor. The aim of the paper is to select the bank determinant key factors of credit risk and to determine the extent to which non-performing loans of bank credits affect the solvency of banks, and therefore also the risk of investors. This selection of the main determinants will be based on the analysis of financial statements. This is essential, especially taking into account the impact of the global financial crisis and the increasingly frequent falling into insolvency customers. Finally, liquidity of customers is that of the bank, and it is crucial for investors to timely identify possible risks associated with bank loans in order to proactively manage risk investment.

Key words: risk management, credit risk analysis, bank solvency, NPL

1. THE CONCEPT AND IMPORTANCE OF CREDIT RISK

Banks as the key subjects in the financing of investments have a strong influence on the risk of investors, hence the solvency of the bank is of crucial importance for the risk management in the investment process. As it has already been mentioned, having in mind the underdevelopment of financial market and the lack of trading activities in securities, it is evident that investments of banks in the developing countries mostly include lending investments. Looking at the overall risk of banks in such conditions, credit risk occupies a dominant position.

Credit risk presents the inability of the credit user to pay back the granted loan along with the corresponding provision within the maturity date. This inability to pay back the loan and the provision presents a loss for the bank involved. In order to prevent this loss, it is necessary for banks to minimize potential credit risk before granting a loan. However, in theory, credit risk is seen as a more comprehensive term, and it is stated that credit risks occurs in three cases (Ćirović, 2006):

- Firstly, if a debtor does not pay back the loan within at least three months after the maturity date set by the credit contract.
- Secondly, if a debtor breaks one of the security clauses in a credit contract. In that case, the negotiation process between the debtor and the bank is initiated automatically; otherwise the debtor is required to pay the total amount loan back immediately.
- Thirdly, economic risk occurs in the cases when the economic (market) value of debtor's assets decreases below the value of the debt. At the same time, economic value of the debt presents

the value of the expected future financial flows (cash flow), discounted to the present moment, through a suitable discount rate. Namely, if the market value of the debtor's assets drops below the market value of bonds, it means that the current expectations of the future financial flows are such that the loan cannot be paid back. However, in this third case, the creditor (i.e. the bank) does not exercise the right to start a legal procedure against the debtor.

Quantifying of credit risk is a legal obligation of each bank which has a working license and is involved in banking business it was entrusted with. In order to define and successfully quantify credit risk, it is primarily necessary to define the credit portfolio of a bank, upon which the identification and analysis and credit risk is done.

Credit portfolio comprises the total amount of credits within a specific bank institution. It includes short-term, long-term, purpose and non-purpose loans, housing, mortgage, manufacturers', consumer loans as well as many other types of loans which are granted to both legal entities and individuals. Credit portfolio of a bank needs to be as diverse as possible, in order to reduce the credit risk. Defining the credit portfolio of a bank belongs to the bank's top management responsibility. The bank's management is mostly limited in creating the credit portfolio by the bank's credit policy. Namely, the credit policy of a specific bank defines the credit standards, i.e. whether the bank will adopt stricter or more flexible standards, it sets the mix and the size of the credit portfolio, the interest rate as the credit price, delegating of authority etc.

One of the key factors in credit portfolio management, and what is more, in reducing the credit risk of banks, lies in the financial analysis of potential clients and the instruments of credit security. Instruments of credit security are aimed at protecting the bank in the case when the client fails to settle the obligations according to the granted assets. When the need for long-term credits is taken into consideration, more complex analyses and projections are used. This requires the projection of a range of statements for a longer period of time.

It is inevitable to mention at this point the need for the quality internal control system and its capability to provide early identification of weaknesses and problems of a credit situation. Namely, internal controls should assist the bank management in identifying weaknesses "along the way", i.e. to identify clients' problems in paying back a credit, enabling the management to respond proactively to those problems.

Bank management should constantly monitor the bank credit portfolio regarding the risk as well as regarding the rating of the granted credits. Rating analysis could be done more efficiently by a credit analyst, due to their constant contact with bank's clients. The analysis of the credit portfolio performances involves (Vunjak et al., 2008):

1. Identification of each element of the credit process
2. Accurate defining of analytical measures
3. Influence of strategies on the credit portfolio performances
4. Assessment of the credit portfolio based on credit categories
5. Assessment of credits and interests payment realization (percent of credit write-offs)
6. Profitability of individual credit executives, i.e. services and administration,
7. Defining of time dedicated to clients and their complaints etc.

Exposure of credit portfolio to credit risks includes wider involvement of the bank management within the credit department of a bank. The task of the credit department assistant is to identify risks, improve the reporting system and set the risk premium according to the types of credit depending on the potential credit risk exposure. The process of observing the credit within the credit portfolio is known as monitoring. Its task is to monitor the performances of both the portfolio as a whole, as well as the performances of individual credits in a specific credit portfolio. By performing the efficient monitoring, bank management maintains the credit portfolio quality, i.e. creates the opportunity to identify problematic credits timely and take necessary measures for risk eliminating of such investments at the department level, or pass it over to the administration, in order to take adequate measures at the bank level, if necessary.

2. CREDIT RISK ANALYSES BASED ON THE FINANCIAL STATEMENTS OF BANKS

For credit risk assessment, and therefore also for the evaluation of the total bank risk, the investors use available audited financial statements of the relevant banks. The audited financial statements with notes are the information database for credit risk analyses for the outsiders such as stakeholders, other financial institutions, as well as investors.

On the base of financial statements the balance sheet of the bank can be decomposed like in the example in the table below. This decomposed balance sheet of a Russian bank shows the relevant items of the audited balance sheet for the analyses.

Table 1: Decomposed balance sheet of the chosen bank (based on financial statements)

Property status	2.008	31.12.2009			change 2008/2009
	Mil. RUB	Mil.RUB	%BS	Mil. EUR	
ASSETS					
Receivables					
1. Clients	39.217	44.890	77,4	1.022,5	5.673
Provisions	-2.138	-4.930	-8,5	-112,3	-2.792
Net loans and advances	37.079	39.960	68,9	910,2	2.881
2. Credit institutions	1.253	2.928	5,1	66,7	1.675
Provisions	0	0	0,0	0,0	0
Net loans to financial inst	1.253	2.928	5	67	1.675
I Loans and advances	38.332	42.888	74,0	976,9	4.555
II Securities (including part	4.154	9.284	16,0	211,5	5.130
III Equipment	1.039	1.055	1,8	24,0	16
IV Other assets	650	440	0,8	10,0	-210
Cash and cash equivalents/Mandatory cash balances with the Central Bank					
V	10.767	4.294	7,4	97,8	-6.473
<i>Reserve by CB</i>	<i>48</i>	<i>250</i>	<i>0,4</i>	<i>5,7</i>	<i>202</i>
Total assets	54.942	57.961	100	1.320	3.018
EQUITY AND LIABILITIES					
I Liabilities to					
customers	25.655	30.155	52,0	686,9	4.500
other institutions	13.195	7.929	13,7	180,6	-5.266
	38.849	38.084	65,7	867,5	-766
II Debt securities	6.795	7.323	12,6	166,8	528
III Other liabilities	470	327	0,6	7,5	-143
IV Subordinated debt	3.358	4.902	8,5	111,7	1.544
V Mandatory interest	8	7	0,0	0,1	-2
VI Equity	5.462	7.318	12,6	166,7	1.856
Total equity and liabilities	54.942	57.961	100	1.320	3.018

Based on the analysis of bank decomposed balance, it can be essentially concluded that there was an increase in total assets of 5%, resp. EUR 1.3 bn. This increase in total assets is explained by expanding the loan portfolio to customers and increasing the portfolio of securities, which is enabled through an increase in customer deposits of the bank.

Bank loan volume has expanded compared to previous year by 12% and in this way developed more than proportionately in relation to the balance sum. Loans granted to customers have increased by 8%, which is also more than a proportionate move in relation to the balance sum. In addition, guarantees and warranties with round 22% are, can be said, of importance for the bank. At the same time, these include standby credit line that allows the client to withdraw credit facilities at any time. For this category of guarantees and warranties there is a provision of 0.1% of total assets (compared to the previous year

were these provisions almost halved). These provisions are reduced due to unreal assessments of the same.

Reduction of provision can be the result of delays in the payment of loans or because there was a large amount of provisions in previous years and the real need for it is reduced. In this case, because the auditor did not put a note, it should be considered that there was no reduction due to non-payment but because of inadequate assessment of previous years. If not analyzed in detail, this situation can mislead analysts and is therefore necessary to establish the real cause of provisions.

In the case that there was a decrease in reserves due to rising non-performing loans, the analyst should determine how it reflects the bank's own capital, resp. equity. Then the analyst determines the loss scenario for each loan category. There's a pessimistic scenario, scenario of the central bank and the optimistic scenario (or 25%, 50% and 75% of loss, respectively). After that, the obtained values are placed in relation with the capital equity. In that way the impact of non performing loans to the capital equity can be shown.

By further analysis of the loan portfolio (based on financial statements notes), it can be seen that the three main sectors in which the bank invests are trade (33%), manufacturing and construction machinery (25%), and construction - real property (19%). By the analysis of invested funds it is necessary to take into account the analysis of the sector in a concrete country in which the bank operates. The analysis of loan portfolio, we can conclude that there is no increased risk sector. Namely, the trade involves a multitude of tasks, and the risk is itself diversified, the same is the case with manufacturing and engineering. If we look at investing in real assets, we can argue that it is risky because the movement of asset price variability, especially if we take into consideration the sector of real property that Russia has in recent years, which is characterized by instability of prices and therefore it is considered as the one of the riskiest sector in Russia. However, because the loans in the real estate sector are secured by mortgages and because the concentration in this sector hasn't resulted in observations by the auditors, it should be considered that the loan portfolio is diversified.

When analyzing the loan portfolio it should take into account the personal loan portfolio concentration of a certain number of clients. Personal loan portfolio concentrations have decreased compared to the previous year. Personal loan portfolio concentrations have decreased compared to previous year. At the end of 2009, 14% of the loan portfolio fell out on five major borrowers, while at the end of 2008 this percentage was 13%, also on five recipients. However, calculated in relation on concentrations of equity in assets at the end of 2009 amounted to 10%, while the same at the end of 2008 was 12%. Risks associated with this concentration can be identified as effective.¹

Last point of analysis of credit risk based on the financial statements is the loan maturity. After analyzing the maturity date of bank assets, it can be concluded that the loan portfolio is 68% short-term. That means that the loans to other financial institutions are to fully mature in the short term. Provisions for individual loans are 11% (previous year 5%), while the allowance of the total loan portfolio amounts to 10% (previous year 5%). In this case the percentage of uncollectible can be justified as the consequence of the crisis and because of this there are provisions in that amount in case of non-performing receivables.

2.1. Non-Performing Loans on the Example of the Banking Sector in Serbia

To ensure efficient risk management, in its Decision on the Classification of Bank Balance Sheet Assets and Off-Balance Sheet Items, the National Bank of Serbia prescribed an obligation for banks to classify on a quarterly basis all receivables that carry credit risk into five categories by the assessed level of their collectability and financial standing of the borrower. This means that banks are required to classify those receivables that constitute the risk-weighted balance sheet and off-balance sheet assets (hereinafter: BA and OA), which includes not only credits, but certain other balance sheet and off-balance sheet items. The most adversely classified assets are those classified in categories D and E.

¹ Data are given in the notes of Financial statements by credit risk analyses (below the table "concentration of loans by sector")

Overview of the categories of the classified balance and off balance sheet asset in the fourth quarter of 2009 is given in the table below.

Table 2: Classified balance sheet and off sheet in Serbia banking sector (National Bank of Serbia)

		Total classified assets	Classified assets		D+E / total classified assets (%)
			A+B+C	D+E	
December 2009	Balance sheet assets	1,351	1,051	299	22.2
	Off-balance sheet items	585	512	73	12.5
	TOTAL	1,936	1,563	373	19.3
September 2009	Balance sheet assets	1,284	985	299	23.3
	Off-balance sheet items	589	514	75	12.8
	TOTAL	1,873	1,499	374	20.0
June 2009	Balance sheet assets	1,266	983	283	22.3
	Off-balance sheet items	622	558	64	10.3
	TOTAL	1,888	1,541	347	18.4
March 2009	Balance sheet assets	1,270	1,031	239	18.8
	Off-balance sheet items	656	605	50	7.7
	TOTAL	1,925	1,636	289	15.0
December 2008	Balance sheet assets	1,178	982	196	16.6
	Off-balance sheet items	662	624	38	5.8
	TOTAL	1,840	1,605	234	12.7

As we can see, in Q4 2009, classified assets amounted to RSD 1,936 billion (v. RSD 1,873 billion in September) or 41.7% (v. 38.5% in September) of gross balance sheet assets and off-balance sheet items. After declining for two consecutive quarters, total classified assets rose in the last quarter by RSD 63 billion or 3.4%. It seems that the upward trend in the most adversely classified receivables ended as they came to RSD 373 billion at the end of fourth quarter (v. RSD 374 billion at the end of Q3).

Further growth in classified assets and stagnation in movements of the most adversely classified receivables resulted in a decrease in the share of D and E classified assets that reached 19.3% at the end of 2009 (20% in September).

According to NPL composition reports submitted by banks to the National Bank of Serbia, at the end of 2009 the share of NPLs in total loans approved was 8.53% net (National Bank of Serbia). The most important sector both in terms of the volume of loans approved and its share in total NPLs was the sector of other enterprises. Its share in total NPLs drifted from 14.78% at the end of Q3 down to 11.8% at the end of 2009. This acceptable amount of non performing loans is due to good credit policies of banks.

3. CONCLUDING REMARKS

Therefore, it is crucial for bank risk management, and therefore also for investors risk management to quantify and manage credit risk of the bank. First of all, the bank has to select the lendings by their impairments if there is some. It is necessary to classify the loans according to risk in order to monitor risky borrowings in time to protect the bank against loss.

If a banking institution, however, in order to achieve the higher yields, decides to take higher risk, it must note the risk before it is created. In that way the bank can pay special attention to examining the credit ability of the borrower to identify the weak areas of the borrower and to maintain attention on weak areas of his business, but not to neglect other aspects of the debtor's business. In such cases, the provisions in case of impairment should be the greater and the loans must be secured by some collateral.

Bearing in mind all set out, the investor should, based on financial statements, analyze the sectors in which the bank provides loans. In the next step, in order to successfully manage the risk, they need to determinate the concentrations of related loans (related parts), if there are any, and as mentioned, it is

important to detect whether the provision for credit loans in comparison to previous year increased or decreased. According to this information, the investor draws information from financial statements, which is the database for the identification of the credit risk and thus a key factor for the identification of the bank solvency as well. If investors in the process of investment financing include a bank whose creditworthiness (solvency) is on the high level, the investors financing risk will be reduced to a minimum and thus will effectively manage the total business risk of the investor.

REFERENCES

- Bessis J., (1998), *Risk Management in Banking*, John Wiley, Chichester (England)
- Ćirović M., (2006), *Banking*, Bridge Company, Belgrade
- Ćurčić U., (2002), *Banking portfolio management –Strategic management of the Bank, Balance, quality, solvency and portfolio risk management*, Feljton, Novi Sad
- Giroux A. G. and Rose S. P. (1991): *Financial Forecasting in Banking – Methods and Application*, UMI Research Press, Michigan, , revision G.A. Giroux, University of Arizona
- Greuning H., Brajović Bratunović S.(2003) *Analyzing and Managing Banking Risk*, The World Bank, Washington, USA
- Pohlman E. J. (1995): *A Framework for Strategic Planning*, in the book: *Handbook for Banking Strategy*, Edited by: Richard C. Aspinwall & Robert A. Eisenbeis, Joh Wiley & Sons, New York.
- Vunjak N., Ćurčić U., Kovačević Lj. (2008), *Corporate and Investment Banking*, Proleter a.d. Bečej, Faculty of Economics Subotica, Subotica
- Banking Law, Official Gazette of the Republic of Serbia, Nr. 107/2005.
- Guidelines for the management of credit risk businesses
- Website of the National Bank of Serbia www.nbs.rs copyright 2001-2011. Visited on 11.04.2011.
- Audited Financial Statements of a Russian Bank for 2009. (according to IFRS)