Risk Modeling Approaches in Terms of Volatility Banking Transactions

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Abstract

The inseparability of risk and banking activity is one demonstrated ever since banking systems, the importance of the topic being presend in current life and future equally in the development of banking sector. Banking sector development is done in the context of the constraints of nature and number of existing risks and those that may arise, and serves as limiting the risk of banking activity. We intend to develop approaches to analyse risk through mathematical models by also developing a model for the Romanian capital market 10 active trading picks that will test investor reaction in controlled and uncontrolled conditions of risk aggregated with harmonised factors.

Keywords: risks, models, banks, tranzactions, financial market
JEL: G17, G21

1. Introduction

The premise of inseparability of risk and banking activity is one demonstrated ever since banking systems, the importance of the topic being important for now and for the future in the development of banking sector.

A category of risks that are difficult to quantify in the activity of credit institutions is the operational risk which is significally present in the lending or market operations. With the diversification and multiplication of types of banking transactions, under the conditions imposed by new technologies and financial innovations, risks related credit sector experienced an upward trend.

The high probability of events generating operational risk was the main impuls for attaching particular importance to the phenomenon, which was materialized through its inclusion in the capital requirement for credit institutions.

Initially, the Basel Committee defined the operational risk as a generator of total loss. After that, it returned on the definition of operational risk referring to the loss due to flawed processes (inadequate), systems with deficiencies in execution, unexpected external events and persons acting improperly.

Once present, operational risk can lead to insolvency in the shortest time and is characterized by limited possibilities of anticipation. Therefore, a cautious attitude of the banks on the side of credit operational risk is a sine qua non for further lending in good condition.

2. Credit risk - definition and importance

Financial management objective is to maximize the value of a bank, this being determined by profitability and risk level. Given that risk is inherent in the banking and unavoidable, the target of financial management is to manage risk so that various types of risk are kept to acceptable levels and profitability is maintained.

To achive its objective a bank needs to (Cocriș and Chirleșan, 2007, 9) :

- identify, assess and continuously monitor the exposure to risk which needs good policies, adequate organizational arrangements, efficient processes, experienced analysts and computer information systems that are highly developed;
- have the ability to anticipate change and act so that the activities of a bank can be structured and restructured to gain in case of change, or at least minimize losses;

- have supervisory authorities not to recommend how to run businesses but to maintain prudent supervision of banks, assessing the related risk structure and insisting that an appropriate amount of capital and reserves to be available to guarantee and protect the solvency

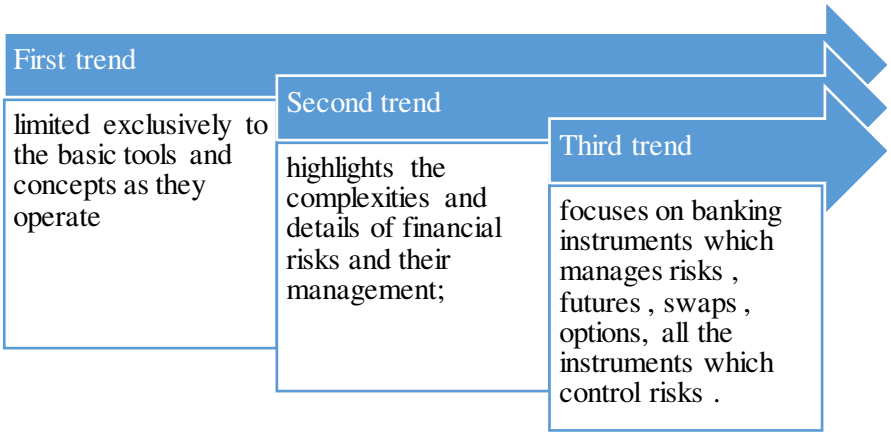
The analysis of economic risk related to the content showed no unique approach to the concept of risk, generally accepted by most economists. Also, currently, there is a strict separation of all types of banking risk. The diversity of the risks that can appear in a bank and a multitude of situations that generate risks, makes it impossible for a classification . Some economists identified different causes that led to the variety of banking risk forms of these, the most prominent being globalization and innovation process.

When defining risk and risk management, most authors focus on classical function of banks, brokerage financial risks within their division; From this point of view the problem is treated especially of unexpected losses in banking assets, losses from market risks, credit or liquidity.

An efficient banking strategy must include programs and bank risk management procedures that minimize the probability of such risks to appear in line with the main objective of banking - minimizing losses - and the most important one - getting a higher profit for shareholders . Bear in mind the cost of implementation and operation aimed at risk management procedures that must not be greater than the potential exposure to risk.

There are 3 bank risk in the relevant guidelines highlighted in the figure below:

Figure 1 - Guidelines in bank risk



Source: Own contribution

Banks can successfully manage all bank risks only if they recognize the strategic role of risk management , if they use the analysis and management to increase efficiency , adopts specific measures to adapt performance to risk and creates mechanisms to report performance based on risk, to ensure that investors understand the impact on the value of risk management on the banking institution. Any decision of bank management takes into account three key factors: money, time and risk. Because the future usually is not determined, the challenge is to evaluate risk related to cash flows within a specific timeframe.

Managers of financial institutions are aware that profit maximization involves a permanent exposure to risk. In this context, risk management is an important component of both bank management and bank strategy (Stoica, 1999,18).

Risk management, like most other terms of relative risk has a number of meanings. Some believes that risk management is the totality of concepts, measures and actions taken (founded and conducted) by management to identify, capture, monitor, analyse and manage the exposures to risk and uncertainty.

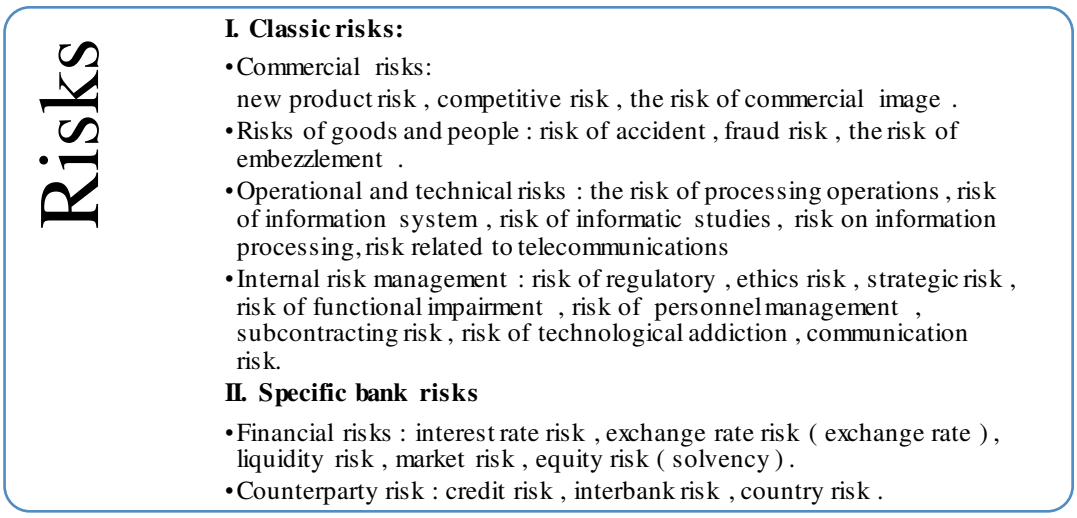
Some specialized sources reviewed and emphasized relevant aspects of the risk management process:

- importance of determining at the highest management level of a company's policies and philosophies in risk management;

- adequate supervision of actions and processes of the company board of directors and top managers;
- the need for a dedicated risk management process which should be based on an assessment, continuous monitoring and control of all enterprise business risks, most important being the credit risk and market risk;

Many risks present common features and their correlated investigation allow comments that can facilitate both the management process understanding and assimilation of processes and techniques. A risk classification does Henri- Pierre Maders (Maders, 1994, 26) comparing classic risks and specific risks of a bank

Figure 2 - Classification of risks



Source: Own contribution, based on Henri-Pierre Maders, op cit, pag 47

3. Models for determining risk

Multi- factor model is especially applicable to public companies . Stock price (Pt) can be estimated based on a large number of foreign risk indices (It), indicators which target market risk, credit risk and other factors beside the operational ones (such as rate variation interest rates, changes in prices on the stock exchange and other macroeconomic effect). So, operational risk is measured as the residual term volatility. This model is based on the assumption that operational risk is a residual credit risk , after market risk and risk of lending were already counted according to the formula :

$$P_t = a_t + b_1 I_{1t} + ... + b_n I_{nt} + \varepsilon_t$$

where ε_t is the residual term , a proxy for operational risk. This model is based on the efficient market hypothesis, concept introduced by Fama in 1970 , which consideres that in efficient capital markets, present and past information is reflected in the share price .

So, now, the author wants to present the multi- factor model for the most commonly traded (June 2016) financial companies on the stock exchange BSE.

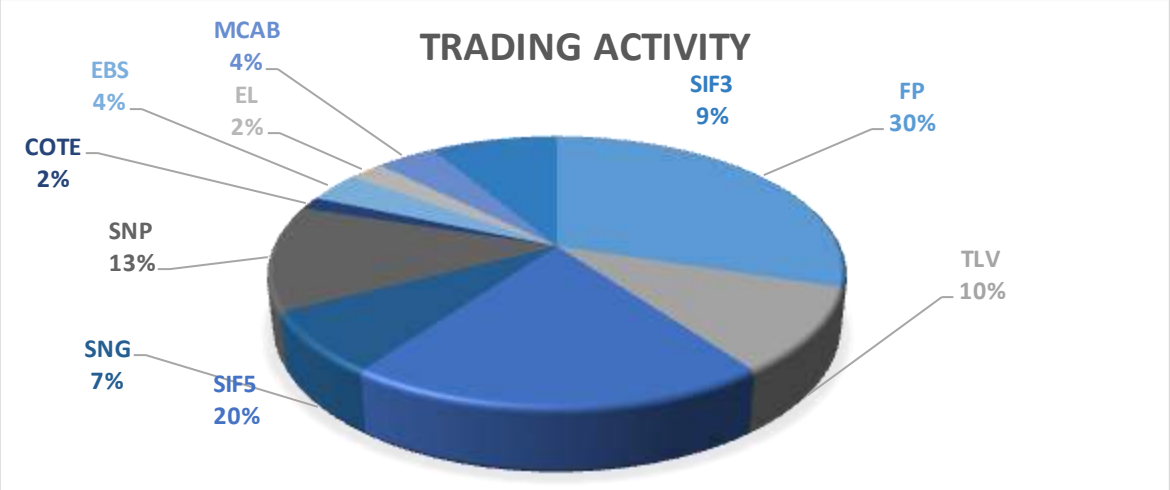
Financial market research indicates the following data (Table 1)

Table 1 - Top traded companies on BSE - June 2016

Simbol / ISIN	Company	Amount	Volum	No. trans.	Price	Var. (%)
FP	FONDUL PROPRIETATEA	12.392.542,65	16.145.118	377	0,7700	1,18
TLV	BANCA TRANSILVANIA S.A.	2.829.148,85	1.341.486	128	2,1100	0,00
SIF5	SIF OLTENIA S.A.	1.645.846,18	1.071.409	253	1,5300	0,00
SNG	S.N.G.N. ROMGAZ S.A.	1.345.319,40	59.786	94	22,5000	0,45
SNP	OMV PETROM S.A.	664.414,76	2.496.913	159	0,2655	0,95
COTE	CONPET SA Ploiesti	255.162,80	3.797	19	67,8000	0,00
EBS	Erste Group Bank AG	149.310,60	1.598	45	93,8000	2,40
EL	SOCIETATEA ENERGETICA ELECTRICA S.A.	78.740,52	6.154	30	12,8000	-0,31
MCAB	ROMCAB SA TG. MURES	78.378,92	9.116	51	8,8000	2,33
SIF3	SIF TRANSILVANIA S.A.	72.643,98	291.502	108	0,2480	-0,80

Source: BSE

Figure 3 Transactions and market share



Source: Table 1

The figure above shows that the most active in the market were FP - PROPERTY FUND (20%) and SIF 5 SIF Oltenia S.A shares. These companies are listed as financial companies and have a high market risk.

Results of implementing multi- factor model to the selected sample are detailed below

Model 1: LAD, utilizând observaţiile 1-4
Dependent variable: DIndicator_2

	Coeficient	*Std. Error*	*t-ratio*
Erste Group Bank AG	−5,38697e-05	1,54337e-05	−3,4904
ROMCAB SA TG MURES	5,38626e-05	1,55172e-05	3,4712
SIF TRANSILVANIA SA	−4,73442e-06	2,35112e-06	−2,0137
BANCA TRANSILVANIA SA	1,47237e-06	5,3529e-07	2,7506

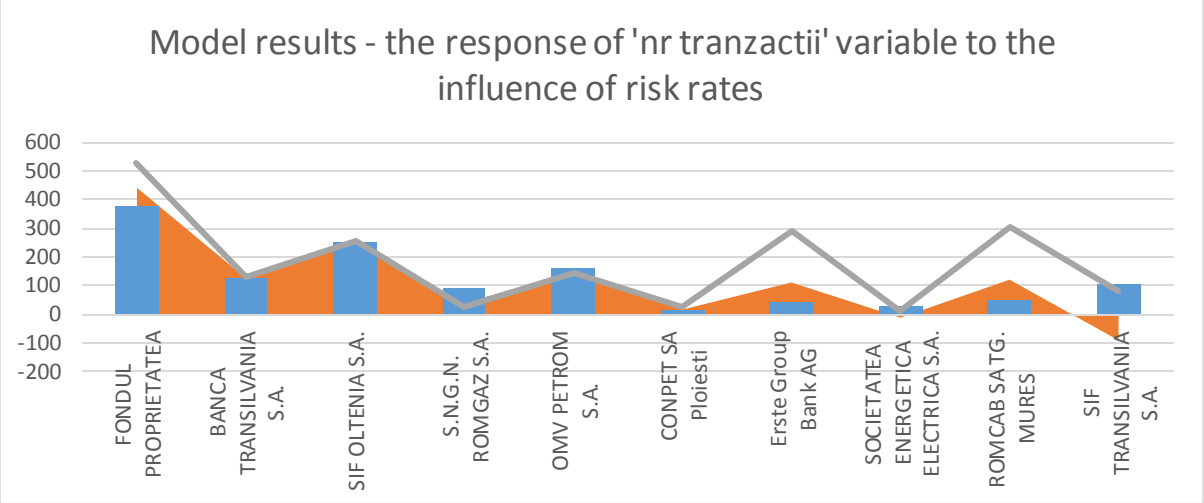
Median depend. var	0,000000	S.D. dependent var	0,500000
Sum absolute resid	0,000000	Sum squared resid	0,000000

Indicator 95% confidence intervals, t(0, 0,025) = 17,97

DIndicator_2	predicție	std.	95% interval	
Value	0,00000	3,62557e-016	1,13066	-inf - inf
Volume	1,00000	1,00000	0,473029	-8,50360e+307 - 8,50360e+307
No. trans.	0,00000	-1,01644e-020	0,000174743	-3,14134e+304 - 3,14134e+304
Var. (%)	0,00000	-9,13890e-021	5,56550e-006	-1,00051e+303 - 1,00051e+303

The graphical representation of the model is shown below:

Figure 5 - The risk test



Source: Own calculations

The orange graph represents the response to risk, blue graph are the number of transactions and the gray line is showing the response to risk T2.

So, the model output indicates that the sample has a moderate response to risk in non-aggregated version and a high response to aggregate risk factors, which indicates that the model is homogenic, so representative for the sample selected. So, in conclusion, risk control leads to the increase of safety for the investors and the number increase of transactions in margin.

The contribution of the author consists in synthesizing the volatile information to determine investors predictable action in terms of risk control. These actions have good roles on listed companies, resulting in the stabilization of the methods and reactions on a market affected by external influences and sensitive to risk stimuls due to macroeconomic crisis phenomena like BREXIT.

4. Conclusions

The economic environment in general, and the financial – banking sector are special areas that are constantly in rough competition for the most important actors of the contemporary world. Any financial operation on domestic and international markets has some risks, that's why credit institutions are known to be institutions which manage risk.

Knowing that risk can be identified, assessed , monitored and reduced but never eliminated, to protect themselves, banks must develop a set of general policy (based on the laws and regulations of the Central Bank) , specific policies (in relation with the development strategy of the bank) and sectoral policies (limits and exposures by industry sectors, areas and territorial units) .

Because banking risks are a source of unexpected expenditure, fair and responsible management of these will act as a shock absorber. At the same time, enhancing the value of bank shares can only be achieved through effective communication with financial markets and the implementation of appropriate bank risk management. All banks and financial institutions must improve their understanding and practice of bank risk management to be able to successfully manage the different ranges of products introduced in the recent years. If the process of bank risk management and overall management system are adequate in terms of prudentiality, then the bank will have profits. Banks can successfully manage bank risks that recognize the strategic role of risk and if

they implement a solid management system, based on caution, and if these requirements are satisfied, there are gains for both the bank and system integrity.

5. Referances

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