

# **Estimating credit risks impact on economic security of a bank**

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## **Abstract**

This article focuses on a number of issues concerning bank risks estimation. First, it defines the main purpose of risk management in banking. Also, it characterizes contemporary approaches to defining the essence of economic security of a bank, as well as highlighting the internal and external factors affecting it. In addition, we introduce risk structure of Ukrainian banks and investigate the dynamics of their loan portfolio. We determine the amount of arrears in client loan portfolio of Ukrainian banks, to justify their level of income and expenses. Together with analysing the credit risk of PJSC CB “PrivatBank” and proposing risk reduction measures in Ukrainian banking system.

## **Keywords**

risk, credit risk, credit activity, credit debt, arrears, financial crisis

## **Introduction**

The financial and economic crisis, reaching most countries of the world, significantly affected the economy of Ukraine, in particular the state of the economic security in its banking sector. Since, as we know, it is banking system of the country that concentrates large cash resources and ensures their movement, distribution, and reallocation, in the interests of economy. In the context of banking sector disfunction there appear a deterioration in economic relations among business entities; it becomes a threat to the economic security of the country.

Currently, the most important aim of national economy long-term development is the creation of high-quality and efficient financial system, which would be competitive in the global market. That is gaining particular importance in the context of European integration. With that, a significant role is given to the banking system as a source of economic development. Its further functioning should be mainly aimed at growth rate, which outpace other financial institutions.

As is known, a modern bank is an element of a credit system. It attracts free funds that are withdrawn from the economic process and then granted to contractors for the temporary use. All banks activities involve risks. In our opinion, minimizing them is a primary objective of bank risk management. Therefore, to provide banking activities successfully banks need to establish and improve the risk management system. Only in this way a bank will be able to identify, assess, minimize and control a risk of a certain type. All banking risks are interrelated. A credit risk is a risk of losing funds provided for temporary use in case of borrower's failure to return them on time and pay interest for the use of credit resources. Accordingly, the credit risk is one of the most tangible in financial banking.

## **1. Literature review**

Some questions the impact of the bank's credit risks on their safety considered in studies of Ukrainian and foreign scholars. Among them, we should mention L. Boykivsky [2009], I. Britchenko [2004], L. Donets [2006], L. Ostankovu [2011], S. Manzhos [2016], [Koleśnik, 2014] and others. However, publications on these issues not fully appreciated the significance of the credit risk's impact on the banking security.

Thus, A. Baranovsky [2014, pp. 127-482] provides a list of challenges and threats to the financial security of the banking system, examines the nature of banking risks, analyses measurement methods for banking risks, proposes the creation of

an effective credit risk management system by introducing standard instructions for initiating, analyzing, decision-making and monitoring individual loans.

L. Boykivska [2009, pp. 164-168] proposes to use indirect indicators of bank risk in the process of risk assessment for a more objective evaluation of all risks to which the bank is exposed.

I. Britchenko [2004] considers it necessary to use international experience in developing own security system and selecting the main areas of risk management.

L. Donets [2006] pays much attention to the coverage of risk management tools and taking them into account when making managerial decisions in conditions of uncertainty and risk.

L. Ostankova [2011] in her study examines the basic methods of decision-making under uncertainty in a competitive environment; especially risk management in the economic sphere.

## **2. Research methods**

Methodological framework of the article have become scientific researches of Ukrainian and foreign scholars as well as basic theoretical principals of economic science for the assessment of credit risks impact on economic security in banks.

In the process of research were used the following general scientific methods: a systems approach – for the development of measures to support economic security of the Ukrainian banking sector; formal and dialectical logic, analysis, synthesis, logical generalization – to characterize modern approaches in determining the essence of bank economic security; clustering and factor analysis – to identify internal and external factors that affect economic security of banks and determine characteristics of their manifestation in modern conditions.

The methods of expert assessments, analysis of hierarchies and comparisons were used as a basis for analyzing the risks of banking activities and developing a scientific and methodological approach to the selection of the bank strategy in order to improve the economic situation in the country; correlation and regression analysis – to assess macroeconomic factors in the formation of loan portfolio in Ukrainian banking system; statistical and comparative analysis of economic indicators – to identify specific features of the credit activity in PJSC CB “Privatbank” as leading innovator in banking sector of Ukraine; normative/regulatory – to investigate prudential requirements in accordance with national standards.

The information base of the article consists of legislative and normative acts, documents of the National Bank of Ukraine and the National Commission implementing state regulation in the sphere of financial services markets, materials of the

State Statistics Service of Ukraine, statistical and analytical materials of the World Bank, financial statements of banks, materials of scientific and practical conferences and periodical scientific publications, information resources of the Internet.

### **3. Research results**

Let us find out what should we understand by “economic security of the bank”.

According to M. Ilyasha bank security – is a system of measures to ensure the protection the interests of owners, customers, employees and the bank's management of external and internal threats. The degree of the bank's security, in this case, is determined by its ability to resist attempts to not only direct penetration into the bank with a criminal purpose but also attempts to harm the bank from competitors and criminal structures. Through intervention in banking activities, gain influence on the bank for the purpose of financial scams and machinations, etc.

L. Artemenko means by banking security ensuring the condition of best use of resources to prevent the bank's threats. As well as creating a stable environment for their effective functioning and maximize profits. In addition, the author notes that the level of economic security of banks is determined by how effectively the bank's divisions confront threats and eliminate the damage caused by the negative impact on the banking activities.

According to R. Gritsenko, the economic security of the banking system – a state of the banking system, in which its financial stability and reputation can not be undermined by the actions of a certain targeted group of individuals and organizations or financial situation arising inside and outside the banking system.

According to M. Zubko, the economic security of the banking activity – a condition where the development and stability are provided by the bank, the guaranteed protection of the financial and material resources, the ability to adequately and without significant loss to respond to changes in the internal and external situation.

Thus, the economic security of the bank most often understood as the set of the protection of commercial and banking secrecy; ensuring the best use of resources to prevent the threats to commercial banks and to create conditions for a stable, efficient operation and profit maximization.

In our opinion, the bank's economic security – is a condition for the best use of the resources of the bank. And it's aimed at the prevention of internal and external threats in order to ensure sustainable development of the bank and to maximize its profits. The main external components of the economic security of the bank are technical, legal, information technology, social and organizational. Among them, the most important are the financial component of the commercial bank's security. As

the bank has enough financial resources for the protection of information, the bank's employees, involvement in all structures of high-quality professionals.

Apart from the listed external factors on the economic security of banks is also influenced by internal (Fig. 1).

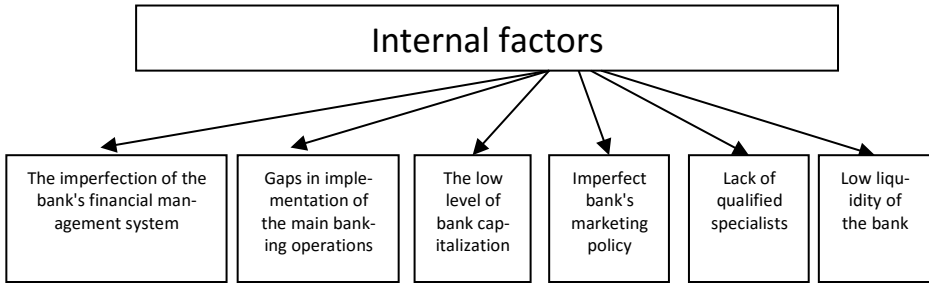


Fig. 1. Internal factors of the bank's economic security

Source: own.

Let us consider in more detail each of these internal factors. The lack of a modern banking system of management is poor banking administration, as well as disputes between the shareholders, founders of the bank. This can be avoided through strategic planning and forecasting activities of the bank, assessment of the profitability of the bank's activities and significant amounts of investment funds in fixed assets.

The poor quality of carried main banking operations is shown in increasing the share of overdue and rescheduled loans in the loan portfolio. To improve the quality of banking services is possible by improving the bank's credit policy and the timely and complete assessment of credit risk. Another way to improve the bank's operations, in our opinion, is to invest in securities.

Failure to observe the liquidity of the banking institution is an inappropriate structure of assets and business units. To prevent this, the bank's management should improve the work units dealing active operations; improve the internal regulations and procedures. In addition, it is important to establish a balance between the attracted and placed funds.

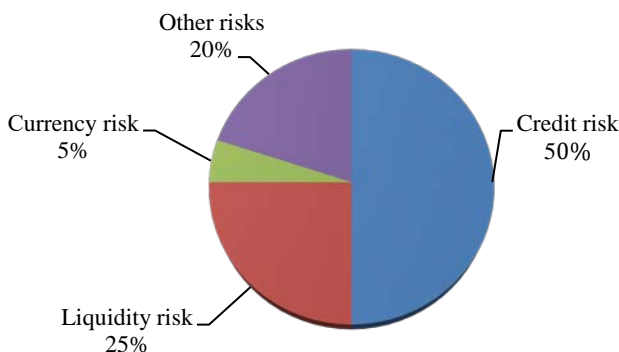
The lack of highly qualified personnel in the banks caused by late training and retraining of personnel, as well as the constant changing employees. To avoid this threat is possible by the creation of favorable conditions of work and the timely holding of training courses among employees.

The bank's marketing policy imperfection – is another key factor, which creates a threat to the economic security of the bank. This is explained by the fact that the

marketing policy, to include pricing, product, and marketing. So, to improve the marketing policy the banks need to: change the range and nature of services; change the prices of various banking products and services in accordance with the conditions of the market environment; timely analyze and planning activities of the banking network, namely branches, ATMs, major bank branches, direct sales.

In our opinion, the low level of banking capitalization is the most crucial factor of its internal economic security. Because it's the bank's capital are the guarantor of financial stability and the maximum satisfaction of the needs business entities in financial resources in the terms of financial and economic crisis.

Research has shown that the credit risk is the first among financial risks affecting the banking security both in volume as well as the possible consequences on a very large scale. Thus, according to estimates of experts banking risks were distributed as follows figure 2.



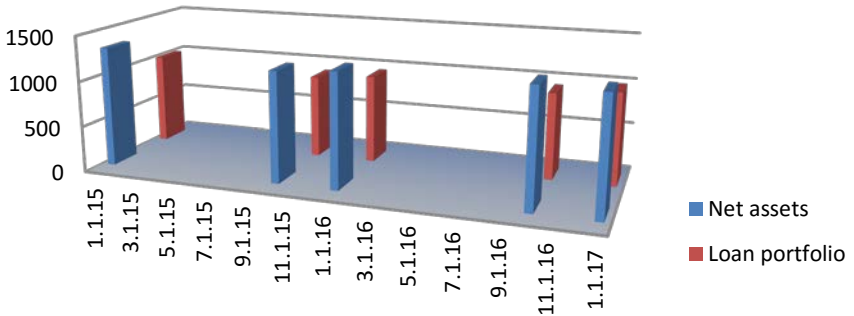
**Fig. 2.** Structure of banking risks [%]

Source: author's elaboration.

We know that during 2015 there was a significant devaluation of the national currency, which has led to an increase in residues of foreign currency assets. In addition, the dynamics of the assets the banking system of Ukraine in 2015 is defined by several factors. These include the elimination of some troubled banks and a significant outflow of client funds. As of October 1, 2015, the share of foreign currency assets in total assets was 47.71%, while the January 1, 2015 – 43.73%. Figure 3 shows the dynamics of assets of the Ukrainian banking system.

During the first 9 months of 2015, the banking institutions have remained low credit activity. This was due to the reduction of the resource base and the deteriora-

tion of the creditworthiness of borrowers. This, in turn, makes the banks more carefully relate to the financial condition of potential borrowers, or even stop the lending for some time, preferring to invest in securities.



	1.1.15	10.1.15	1.1.16	10.1.16	1.1.17
Net assets	1316,85	1208,89	1254,39	1275,94	1256,3
Loan portfolio	1006,36	911,02	965,09	943,06	1005,92

Fig. 3. Dynamics of net assets and the loan portfolio the banking system of Ukraine

Source: [www.bank.gov.ua].

The study found that during the first 9 months of 2015, the customer loan portfolio decreased (by 9.47% or 95 334 million. UAH.) And as at 10.01.2015 amounted 911 020 million UAH. The share of foreign currency loans in the loan portfolio is still high (55%). At the same time, about 20% of foreign currency loans have been provided to the population (including a significant portion of foreign currency loans which were provided as early as the 2008-2009 for the purchase of real estate and construction). On results of 2016 the net assets of the Ukrainian banking system increased insignificantly. During 2016 the customer loan portfolio decreased (by 0,4%).

On 8 May 2015 entered into force the Memorandum on the settlement the issue of restructuring consumer loans in foreign currency. According to it, foreign currency loans, and the remains of the principal debt that does not exceed UAH 2,500,000 will be restructured into the national currency at the NBU rate set as at 01.01.2015. Several banks signed the Memorandum, including PJSC “Alfa-Bank Ukraine”, PJSC “Bank of St. Michael”, PJSC “Privatbank” PJSC “CREDIT AGRICOLE BANK” and others.

Since the beginning action of the Memorandum launched the process of final resolve the issue of restructuring consumer loans in foreign currency. As a result, the financial burden on the borrower will be reduced. It caused a political and financial crisis, which began in 2014 and, among other things, caused the devaluation of national currency in Ukraine.

We believe that acceptance of the above bill and the implementation of its main provisions will significantly reduce the amount accounts payable, which will positively affect the development of the banking sector and will also improve the economic situation in the country.

Taking into account the devaluation of the national currency a significant share of foreign currency loans in the client loan portfolio, the volume of overdue loans in the period of 9 months in 2015 increased by 33.44% (45 435 million UAH) And as at 10.01.2015 amounted 181 294 mill. UAH, which corresponds to 19.9% of the client loan portfolio. The share of overdue loans in the total amount of loans as at 01.04 in 2016 it amounted to 23.6%. Dynamics of the volume of overdue loans in the loan portfolio of the client are shown in Figure 4.

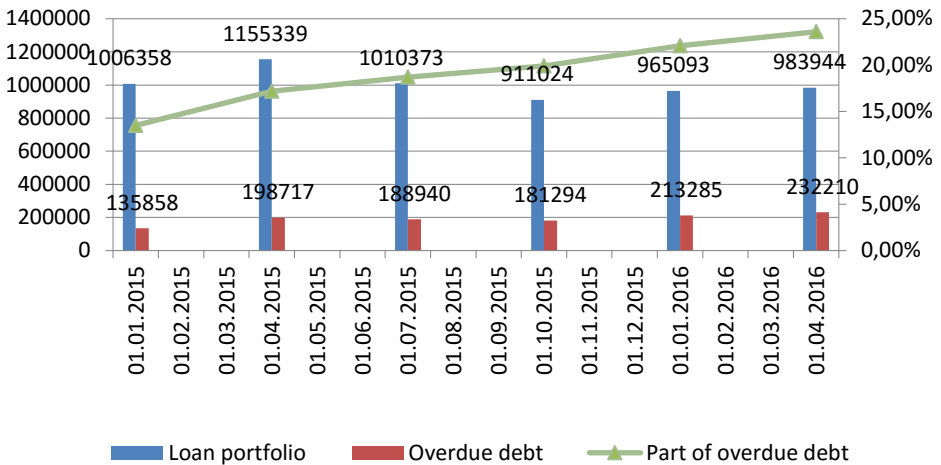


Fig. 4. Dynamics of overdue debt in the client loan portfolio in 2015-2016, thousand UAH

Source: [www.bank.gov.ua].

The research showed that the corporate client loan portfolio consists primarily of short-term and medium-term loans in the national currency to non-financial corporations. Credit portfolio of business entities by economic activity consists mainly



of loans that were issued in the following areas “Wholesale and retail trade”; “Repair of motor vehicles and motorcycles” and “Manufacturing industry”. The volume of credit transactions in the sphere of construction and real estate are also significant.

At the beginning of October 2015, the average interest rate on credits granted to economic entities was 19.5% in local currency and 9.1% in foreign currency (18.3% and 8.3% accordingly at the beginning of January 2015 of the year). At the same time, despite the high competition for resource base, which leads to an increase in interest rates, as well as a high level of NBU discount rate, the cost of credit resources will remain high in the future.

During the first 9 months of 2015 retail client loan portfolio decreased by 16% (33 667 million. UAH.) And on October 1, 2015, was 177 548 million UAH. During 2015 a significant impact on the dynamics of the index was the recognition of insolvency of some banks. Including groups, according to NBU classification, that had significant credit portfolio volume, including – retail. Consumer loans (including the “cash” loans) are the main component of the retail customer loan portfolio.

The volume of mortgage loans granted to individuals is 40.5% of the retail loan portfolio as of 10.01.2015 year. In general, the slow pace of development of mortgage lending are caused by relatively low rates of recovery of the construction industry, lack of long-term resources, as well as the relatively low effective demand the population on long-term loans.

Unfortunately, the number of banks in Ukraine constantly decreasing in recent years (see table 1), due to a problem in the financial system in general, and in particular in the banking sector.

**Tab. 1.** Dynamics of the number bank institutions from 01.01.2010 to 01.03.2017

Indicator name	01.01.2010	01.01.2011	01.01.2012	01.01.2013	01.01.2014	01.01.2015	01.01.2016	01.03.2017
The number of active banks	182	176	176	176	180	163	117	93
Including: foreign capital	51	55	53	53	49	51	41	38
Including with 100% foreign capital	18	20	22	22	19	19	17	17

Source: [www.bank.gov.ua].

As shown in Table 1 as of 01.03.2017, the 93 banks operate in Ukraine, which is 89 less compared to 01.01.2010. At the same time, one bank (JSC “Rodovid Bank”) is in the readjustment phase from 01.01.2013.

The research showed that as of June 1, 2015, the income of Ukrainian banks amounted 922 billion UAH, and expenses 117.5 billion UAH. In other words, the domestic banking system was a loss of 26.3 billion UAH. Bank assets grew in 1261, 6 billion. UAH. Total assets amounted to 1.4955 trillion. UAH. At the same time, return on assets was -4.56% and return on capital -46.98%.

Revenues of banks in Ukraine in January-February 2016 compared with the corresponding period in 2015 decreased by 46.9% and amounted to 24.8 billion. UAH. Expenditures of banks amounted 26.8 billion. UAH.

Damage to the banking system on March 1, 2016, amounted to 2.0 billion. UAH. During February 2015 total damage 113 existing banks amounted to 27.8 billion. UAH.

At the same time, nominal decrease rates of income and expenses of banks in the current year were mainly due to a high comparative base last year. That was due to a significant increase in the exchange rate of foreign currencies against the hryvna in February 2015. During February 2016 the total amount of damage to the existing bank institutions amounted to 1.1 billion UAH. Moreover, almost all the damage was caused by one bank.

The negative financial result for February was primarily caused the losses from trading operations in the amount of 3.8 billion UAH. (In particular, losses from trading in foreign currencies and bank metals 5.6. UAH.). At the same time, in February, contributions to reserves amounted 0.2 billion. UAH., Compared with January decreased by 0.8 billion. UAH. Net interest income of banks in February amounted to 3.7 billion UAH, against 3.2 billion UAH. January. As of 01/03/2016, 83 Ukrainian banks have made a profit on the total amount of UAH 3.2 billion, including the February 76 banks for a total amount of 1.7 billion UAH.

So from 2014 to the present, the credit activity of banks remains low. This is due to contraction the resource base, reducing the creditworthiness of potential borrowers, casts doubt on the further economic development of the country. These factors make banks more carefully check the financial condition of borrowers, or even suspend lending for some time.

As of 01.06.2015, banks have provided loans amounting to 964.8 billion UAH, of which: corporate loans amounted 791.3 billion UAH, loans to individuals 148.9 billion UAH. The part overdue loans in total loans were 16.5%. The total liabilities size was 1.2616 trillion. UAH. The capital of banks was 139.8 billion UAH, the authorized capital of 178.5 billion UAH. Regulatory capital amounted to 149.5 billion. UAH. The banks' liabilities were 1.1218 trillion. UAH. From which deposits of legal entities – 272.7 billion UAH, individuals' deposits 373,4 billion UAH. Credit

activity of banks remained low for the first 9 months of 2015, due to the same problems as in 2014.

As of 03.01.2016, the bank's assets amounted 1.3309 trillion UAH. The number of loans granted increased to 1.0224 trillion UAH, including credits to economic entities 832.9 billion UAH and loans to individuals 157,6 billion. UAH. The structure of the loan portfolio is shown in Figure 5. The obligations of Ukrainian banks amounted 1.1965 trillion UAH. The part overdue loans in total loans were 23.7%. The capital amounted to 134.4 billion UAH, including the authorized capital of 206.7 billion UAH. The regulative capital was 129.9 billion UAH.

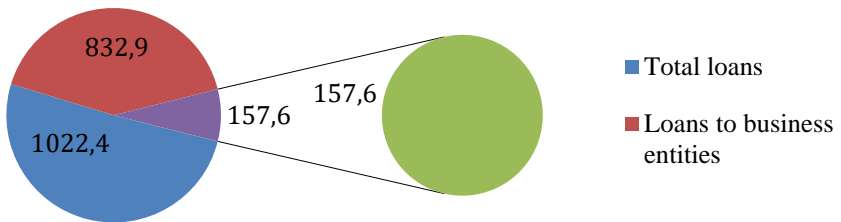


Fig. 5. The structure of credit portfolio of banks of Ukraine on 03.01.2016

Source: [www.bank.gov.ua].

Credit arrangement is the most common banking transaction, which generates the principal share of revenues (Tab. 2) As is seen from the table, relative share of loans in assets of PJSC CB “PrivatBank”, which is a leading innovator in Ukraine, tends to decline over last few years. Therefore, it’s safe to say that along with reduction of total loan portfolio the share of overdue and bad loans also decreases, as well as reserves for them.

Tab. 2. Dynamics of loans PJSC CB “PrivatBank” for 2014-2016 years

Indicators	2014	2015	2016
Total assets, mln UAH	204585,00	264886,28	220017,62
The individuals loan portfolio	22126,57	26105,48	19722,84
The corporate client loan portfolio	139212,15	151705,00	34968,79

Source: [http://static.privatbank.ua/files/data.pdf].

Some indicators of PJSC CB “PrivatBank” for the 2nd quarter of 2015 are shown in Table 3.

**Tab. 3.** Performance indicators PJSC CB “PrivatBank” for the 2nd quarter 2015

Indicators	At the reporting date	Normative indicator
Regulatory capital, UAH	22697883	120000
Adequacy of regulatory capital [%]	9,97%	Not less than 10%
Current liquidity [%]	63,23%	Not less than 40%
The maximum credit exposure to any one counterparty [%]	24,58%	Not more than 20%
Large credit risks [%]	262,71%	Not more than 800%
The maximum exposure to credit risk on transactions with related parties [%]	10%	Not more than 10%

Source: [<http://static.privatbank.ua/files/data.pdf>].

Therefore, based on Table 3, PJSC CB “PrivatBank” has satisfactory performance indicators.

We should noted that PJSC CB “Privatbank” is classified as insolvent by the NBU Board’s Resolution No. 498 from December 18, 2016.

Table 4 shows the dynamics of liquidity, profitability and quality of assets of PJSC CB “Privatbank” for 2014-2016.

**Tab. 4.** Liquidity and profability indicators of PJSC CB “Privatbank” for 2014-2016

Indicators	2014	2015	2016
Liquidity [%]			
Liquid assets/assets	13,2	13,7	14,2
Liquid assets/attracted resourses	16,5	19,4	17,0
Liquid assets/liabilities	14,9	15,3	15,0
Profability [%]			
ROAA	0,4	0,1	-55,8
ROAE	3,5	0,9	-674,0
Net interest margin	6,7	2,2	2,4
Interest expenses/interest income	64,5	86,9	87,9
Assets quality [%]			
Loan reserve ratio	14,5	15,7	294,4
Reserve coverage NPLs	-	-	272,2

Source: [<http://static.privatbank.ua/files/data.pdf>].

## **4. Discussion of the results**

Our study showed that the bank is exposed to credit risk. That is defined as the risk that one party to operations with financial instruments will cause a financial loss the other side, as a result of non-fulfillment of obligations under the contract. Credit risk arises from the Bank's lending and other transactions with counterparties giving rise to financial assets.

The maximum exposure to credit risk PJSC CB "Privatbank" is reflected in the carrying amounts of financial assets in the statement of financial position. For guarantees and commitments to extend credit, the maximum exposure to credit risk is equal to the sum of liabilities. Credit risk is managed by obtaining collateral and other means of credit risk cover. The Bank structures the levels of credit risk to which it is exposed, by setting limits the amount of risk in relation to one borrower or group of borrowers. General loan policy set out in the Bank formalized credit policies.

Official single instruction bank lending controls every significant aspect of the lending operations and contains a description of the procedures for analyzing the financial condition of borrowers and collateral assessment, and defines the requirements for loan documentation and loan monitoring procedures. The collateral policy of PJSC CB "Privatbank" is based on thorough testing and a comprehensive assessment of the value of the collateral. A significant part of the loans in the loan portfolio of PJSC CB "Privatbank" has been granted under the terms of the accelerated payments in the event of deterioration in the financial condition of the borrower. Except in very rare cases, the loans are available only to those customers who have opened accounts in PJSC CB "Privatbank". This policy provides the bank with the double advantage of additional collateral for loans and additional business in other areas of corporate banking services. The Bank structures the levels of credit risk to which it is exposed, by setting limits the amount of risk in relation to one borrower or group of related borrowers. Such risks are regularly monitored and reviewed at least annually or more frequently.

Credit risk is managed on the basis of the regular analysis of the ability of borrowers and potential borrowers to meet their obligations to repay the loan and interest, as well as, if necessary, by changing the lending limits. Also, credit risk management in part by obtaining collateral as well as corporate or personal guarantees.

## **Conclusions**

Financial instability, in conditions of which is the banking system of Ukraine has led to a decline in bank lending market. The economic crisis in Ukraine causes some banks minimize lending programs. This is due to the fact that banks cannot compensate for their own costs of lending at the expense of revenues.

The main obstacles to the development of leading Ukrainian banks belong to the crisis condition of economics, a significant amount of bad loans, reducing public confidence in the banking system, the instability of the legislative base and others.

In these difficult conditions to maintain the economic security of Ukraine's banking sector consider it necessary to carry out activities such as:

- Avoid administrative decisions related to greater risk. For the realization of this measure is appropriate to the process of decomposition and aggregation of credit risk, which refers to the use of a greater degree of value judgments. Moreover the closer the relationship between the probability of default and any factor, the lower the “tree of decomposition”. Possible levels of decomposition and aggregation for the banking retail loan portfolio are the mortgages, credit cards, other retail loans to borrowers, their location, terms of loans, floating or fixed rate of interest on the loan, internal rating of borrowers. Possible decomposition and aggregation levels for the corporate banking loan portfolio are their locations, industry sector, the term of the loans, floating or fixed rate of interest on the loan, internal rating of borrowers. The first level of aggregation should be carried out on the rating of the borrower. The actual value of the risk, or VAR (value-at-risk) in our opinion should be assessed for each loan that gets each individual borrower, although it may be a low level. Should use correlation coefficients over the last few years as it moves up the “tree”. At the highest levels, where the correlation becomes weaker and less reliable, we consider it necessary to make a strategic decision about whether to consider the correlation separately or suggest the existence of a perfect positive correlation.
- Create reserves, those are able to offset the risks' effects to the bank, if necessary. The formation of reserves has little to do with the management of credit risk and a lot to do with accounting, regulatory reporting requirements and the efforts taken by the management of banks in order to indicators that are in the report, in conformity with their own purposes. Reserves are formed for losses that are expected but have not yet been reflected in the financial statements. In our view, banks should create reserves for expected

losses on loans, the quality of which has deteriorated and only when such loans comply with certain criteria in terms of default;

- Diversify risks. For what it is important to bear in mind that the overall purpose of credit management is to achieve a minimum level of expected credit losses with a given standard deviation or minimum standard deviation, as well as at a given level of expected losses
- Establish flexibility in lending. Commercial banks are able to offer a relatively flexible lending option. The Bank may make such limited agreements but will be the relative flexibility in terms of changes conditions in the future. The borrower can extend the loan term, increase its amount or pay the loan before the pre-specified period of time depending on changes in the business environment. An example of such flexibility that banks can offer, is to use cap (maximum fixed interest rate) and collar (fixed high and low-interest rates). The borrower who takes a loan with a floating interest rate is ready to accept the level the interest rate risk but may fix the maximum limit that risk at a certain level. If the borrower is ready to give up the benefits that are received from the reduction in interest rates, it is a cheaper alternative to a collar. Cap and collar are additional usage options.

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