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## **MODELS OF ANALYZING OF THE COMPETITIVE ENVIRONMENT IN ESTIMATION OF THE BANK'S ECONOMIC SECURITY**

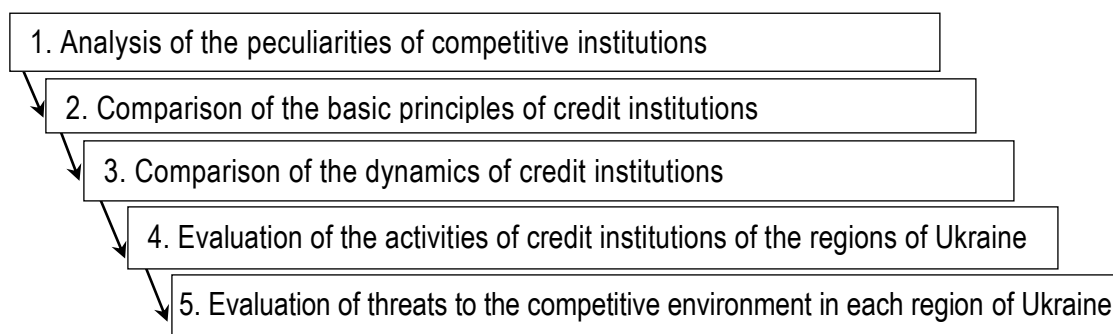
*This article is devoted development of complex economic-mathematical models of multidimensional analysis of the competitive environment of the bank's economic security. Implementation of models of estimating and analyzing the competitive environment is built on the basis of researching Ukrainian credit unions and is developed for each region of Ukraine. It makes possible to raise the level of management decisions concerning formation of strategic alternatives for maintaining the commercial banks viability.*

*Keywords: analyzing, commercial bank, competitive environment, credit unions, economic security, estimation, methods of multidimensional analysis, taxonomic integral indicator, threat.*

**Introduction.** The peculiarities of the current economic situation in Ukraine are facilitating an increased risk for any and all credit institutions. The experience has shown that almost always there is a threat of losing the bank funds invested in certain projects. So nowadays all banks are susceptible to threats to the banking activities which also increase due to the unstable banking system state that could reduce the level of commercial bank's economic security [3; 6].

One of the major threats to the economic security of commercial banks is the external threat of competitive environment [1]. The most prominent representative of the bank competitive environment in Ukraine is the credit union. A great number of credit unions in Ukraine make us analyze the threats that they can cause to banking economic security.

**Main body.** Investigation of the competitive environment of banking activities was carried out with the algorithm presented in Fig. 1.



**Fig. 1. Models of analyzing the competitive environment of the banking economic security**

The unfair competition is an indispensable feature of modern market economy. Its tools can be used not only to obtain undue advantage over rivals in business, but also to suppress competition in order to oust them from the market. The most common known bank competitor is the credit union that provides access to cheap microfinance resources. At the community level this institution contributes to the development of small and medium businesses, renewal and improvement of public services, increase of the level of interaction and self-assistance of the community residents, but at the same time, their activities affect adversely the operations of the banking system in general and the activities of each commercial bank.

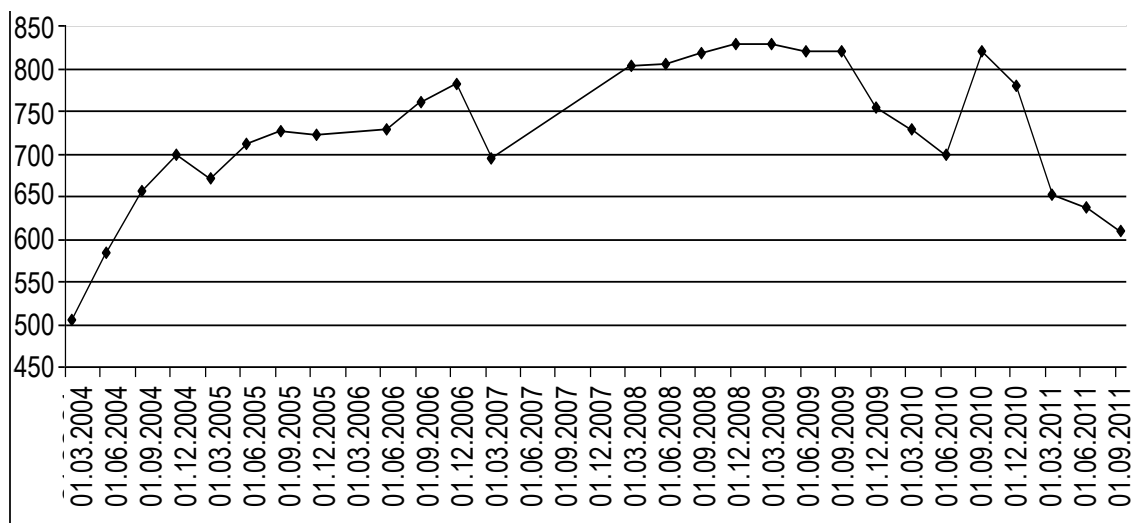
The credit union is a non-profit public organization that operates on a cooperative basis for social protection of its members through mutual credit with their accumulated savings [4; 10]. Non-profitability of the credit union is due to the fact that all its activities are not for profit but to provide credit and savings services to its members.

The credit union is a self-governing democratic organization whose members only shall determine the types of services it provided, and set the terms for their provision. In other words, credit unions are financial mechanism through which people by cooperating of their efforts, ideas and resources can get much cheaper services they need than if each of them tried to act independently. In particular, credit unions are determined by the following features:

- The credit union has always been created and operates on the basis of a monolithic community of people sharing interests, activities or places residence;
- Credit unions provide services only to their members. Thus, unlike businesses credit union members are both their owners and customers;
- In the credit union there are no founders or authorized fund in terms of traditional interpretations of these concepts for businesses;
- Each member of the union, regardless of the size of his contributions shall have a vote in the management of the credit union;
- Managing the credit union shall be in accordance with the principles of democratic self-government. The highest governing body of the Union is the General Meeting of the members which is held at least once a year;
- The credit union is not engaged in any business activities other than providing credit and savings services to its members;
- The credit union is created and operates primarily to enable its members to obtain credit on favorable conditions. The interest earned on loans by the union, is its revenue which shall be directed to the formation of funds and interest on the deposits of the members;

- The credit union by its nature is not only an effective mechanism of mutual crediting its members but also a public organization. Therefore, the union by the decision of the general meeting or the governing body may provide organizational and financial support for various community initiatives and humanitarian programs for its members and to charities and social projects for children, the disabled and other socially vulnerable population groups [5].

The dynamics of the number of credit unions in Ukraine is presented in Fig. 2, the number had a growing trend till 2008, from the late 2009 there is a decreasing trend with peaks of growth.



**Fig. 2. Dynamics of the number of credit unions of Ukraine**

Credit unions operate under the laws of Ukraine “On Financial Services and State Regulation of Financial Services”, “On Credit Unions” and other regulations governing the activities of credit unions in Ukraine [4; 5; 10]. The activity of credit unions is based on the following basic principles: voluntary entry and free exit from the credit union; equality of the credit union members; self-government; publicity.

Financial activities of credit unions make them look like banks. There is both much structures in common and different between these. Both banks and credit unions act in the market as financial intermediaries created to meet consumer needs for financial resources and this is common between them. The fundamental difference between these structures is the purpose of each of them: it is a profit for the bank and financial services for credit unions.

Common features of these credit institutions are first of all determined by their ownership. The commercial bank is a joint-stock venture, so like the credit union it is based on joint cooperative ownership. The credit union

and banking institutions have also the same management principles. Both in the commercial bank and credit union management is based on democratic principles which includes election of governing bodies and their accountability to the shareholders or the shareholders' meeting [4; 6; 9]. More detailed differences between the cooperative and the bank are listed in Tab. 1.

Table 1

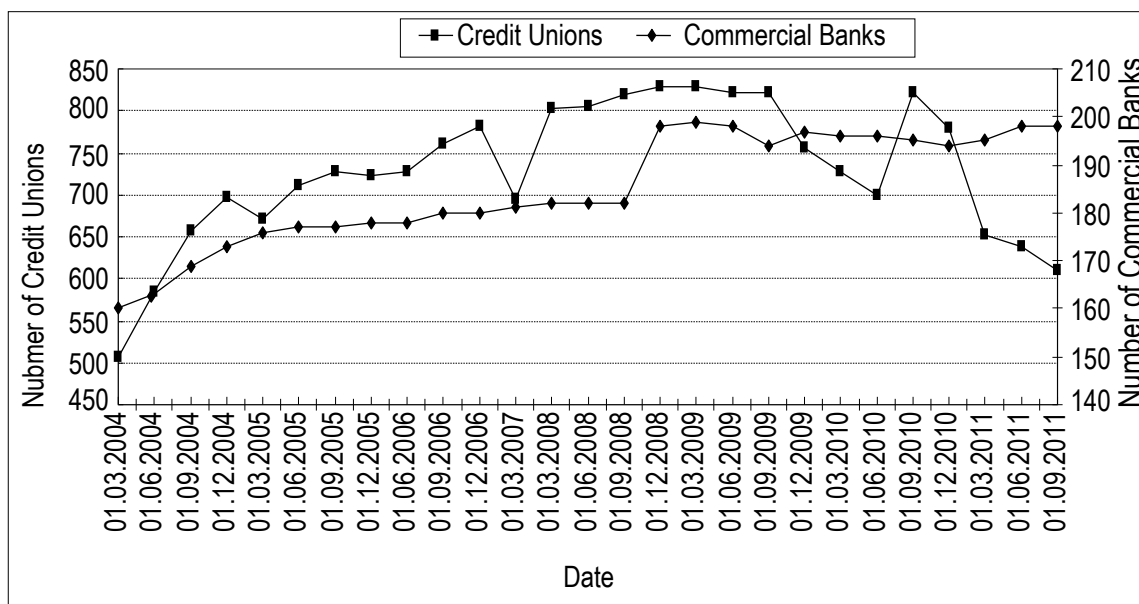
**Common Features and Differences between Credit Union  
and Commercial Bank**

Features	Credit unions	Commercial banks
<b>Common features</b>		
Form of ownership	Common cooperative	
Principle of management	Democracy	
<b>Differences</b>		
Objective of activity	Meeting the needs of cooperative members (shareholders) in loans	Profit
Organizational and legal form	Consumer cooperative	Joint Stock Company
Distribution of profits	It's distributed among the shareholders according to the amount of their participation in cooperative activities, contributions to the reserve fund	Most are directed at increasing the liabilities of the bank, dividends to the shareholders, various funds (reserve fund for shareholding employees)
Sources of equity	Equity contributions to members	Contributions from shareholders to the authorized capital, profits
Types of services provided	Loans to the members of the cooperative	Loans, accounts of legal entities and individuals, other services
Object of lending	Production development of businesses and personal needs of the members of credit cooperatives	Meeting the needs of credit resources of individuals and legal entities that appropriately are creditworthy and provided with financial backing
Susceptibility to currency fluctuations	Immune, as they operate only with national currency	Susceptible, because exchange rate fluctuations lead to significant problems for crediting
Prospects of development	Ability to unite into their own cooperative bank or association of credit unions on a cooperative basis	Ability to open branches in view of the above principles and factors

Overseas credit unions in their development are closer to the banks, but the difference remains: they serve only their members. So, credit unions increasingly compete with banks that significant by influences the economic security of each individual bank and the entire banking system in general.

With regard to this competition between banks and credit unions we can say that they operate attracting savings of individuals and consumer crediting market. In the field of micro-credit business credit unions are the only source of crediting small and middle businesses. As for the advantages of credit unions they possess maximum proximity to their direct recipients, as well as enable the borrower to get credit under a simplified scheme even in small amounts. Credit unions also have an opportunity to select their members more thoroughly and hence their customers, so there need to scrutinize the creditworthiness of the borrower. And it is not always profitable for banks to deal with small borrowers because of significant administrative costs [2; 4, 5].

Ukraine now has more than 600 credit unions and approximately 170 commercial banks [6]. Comparative dynamics of the number of credit unions and commercial banks is shown in Fig. 3. Non-bank financial services sector in Ukraine is underdeveloped, but has a huge potential that can be developed. From the macroeconomic point of view of the necessity of its development is caused by the ability to increase the stability of the financial system by bringing a great amount of money into circulation including savings.



**Fig. 3. Dynamics of the number of credit unions and commercial banks of Ukraine**

To generalize the relationship between credit unions and banks in the lending and financial services market the trend of increasing competition between them can be predicted. Despite the rapid growth of assets of domestic banks, several factors indicate a trend towards loss of stability. One of the factors is macroeconomic situation.

Complex research of the bank's economic security level should include estimating of all spheres of commercial bank activity in conditions of threats of internal and external competitive environment. In order to calculate complex index of the bank economic security level it's necessary to carry out different types of estimation and analyzing of commercial bank activity both in static and dynamic context on the basis of complex integrative approach to formal and informal methods taking into account all types of information, bank activities and its external environment.

Assessment and analysis of complex general condition and level of Ukraine's commercial bank's economic security are carried out in this paper by the following basic stages:

1. Investigation of the commercial bank's economic security level
  - Assessment and analysis of the commercial bank's reliability level (ES);
  - Classification of the commercial banks according to the level of their reliability.
2. Competitive environment analysis
  - Analysis of peculiarities of the competitive environment;
  - Estimating the level of influencing the state of the competitive environment.

This research is based on the methods of cluster analysis and evaluation of the integral rating [7; 8]. Rating evaluation have been realized by the method of complete reduction, which is to reduce the number of characteristics that describe the activities of commercial banks. These methods are divided into two groups: methods of generalized parameters and methods of reducing the number of characteristics. The first group of methods is aimed at obtaining an integrated estimation of objects that have multi-character nature in the form of some function  $f(y_1, y_2, \dots, y_q)$  which reflects the influence of characteristics, and in such way that makes possible to organize researched objects. The essence of the second group of methods is to replace the initial set of characteristics by set of diagnostic characteristics.

To assess the commercial banks' economic security level and the competitive environment is used method for constructing taxonomic index level of development [7; 8]. Analysis of the competitive environment in the regions is studied in order to determine the level of development of credit unions and their level of influence on economic security. Consider the algorithm of the research more detail.

Step 1. Formation of the scorecard system. At this step indicators of nearly 780 credit unions throughout the territory of Ukraine were chosen [2]:

- the number of credit unions in the region;
- the size loans to credit union members;
- the size of deposits on term accounts of credit union members;
- the membership of credit unions;
- the number of members in arrears on loans.

Step 2. Standardization of data. Because the values were expressed in absolute and relative terms and have different units, the second step of the procedure there was standardization carried out.

Step 3. Construction of standard. This step consists in the differentiation characteristics of the data matrix on stimulants and deterrents. At this step there were selected parameters, i.e. the reference value for each parameter of the credit unions studied in order to determine a region the reference object.

Step 4. Determination of Euclidean distances between objects and standard. At this step the similarity level of the indicators of credit unions activity for each analyzed region with region-standard which was determined in the previous step is calculated, i.e. the distance from the standard object to each of the studied regions is estimated.

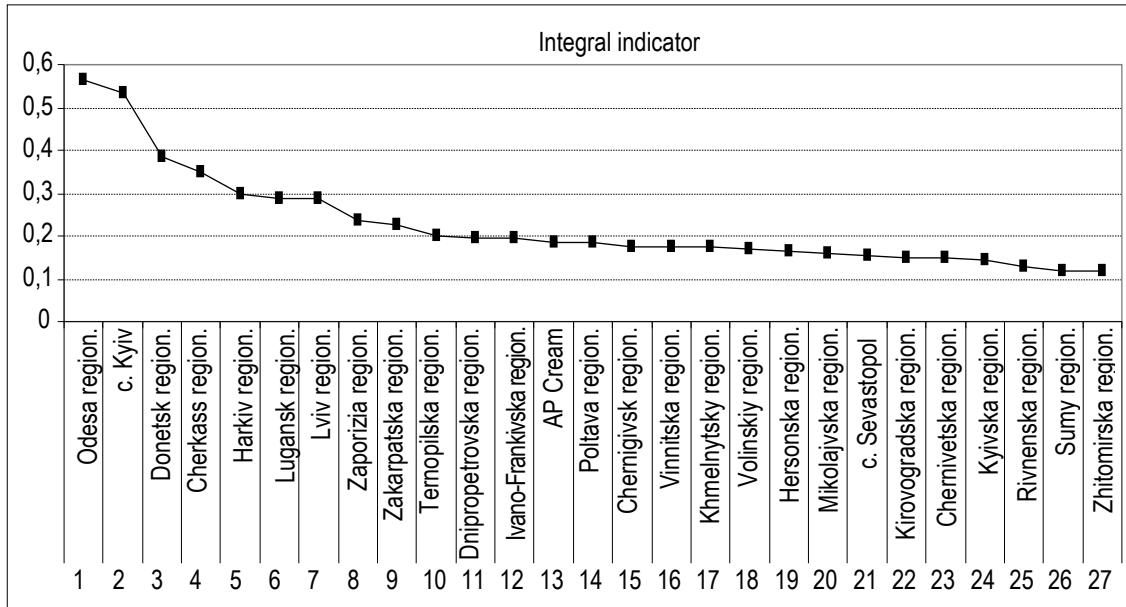
Step 5. Calculation of integral index (taxonomic indicator). At this stage the rate of the general level of credit unions in some regions of Ukraine is calculated (Fig. 4).

The largest value of the integral indicator of the level of credit unions was in Odessa region and Kyiv, the lowest in Sumy and Zhytomyr regions.

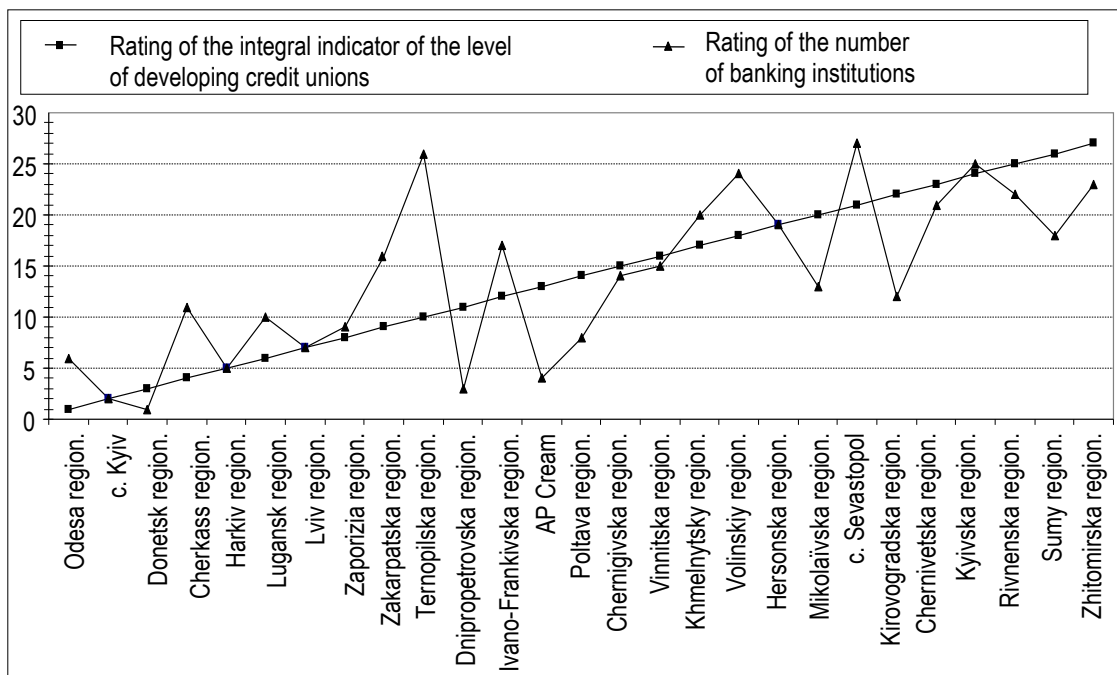
The value of the integral indicator of credit unions suggests that in many areas there is almost the same level of development of the activity of credit unions, and only some areas have a high enough level of development of credit unions, which means a high risk to the economic security of banks that have major operations in those areas. For comparison of banks and credit unions let us look at rankings of regions in terms of the amount of banking institutions and the level of credit unions in each of the regions of Ukraine (Fig. 5).

Analysis of the comparative statistics of the number of banking institutions and development credit unions in each region makes it possible to distribute the following groups of Ukraine's regions in terms of threats level of Competitive Environment (Tab. 2).

In Fig. 6 regions are presented in order of the decreasing level of credit unions and banks in terms of their reliability in every region of Ukraine.



**Fig. 4. Integral indicator of credit unions by the regions of Ukraine**



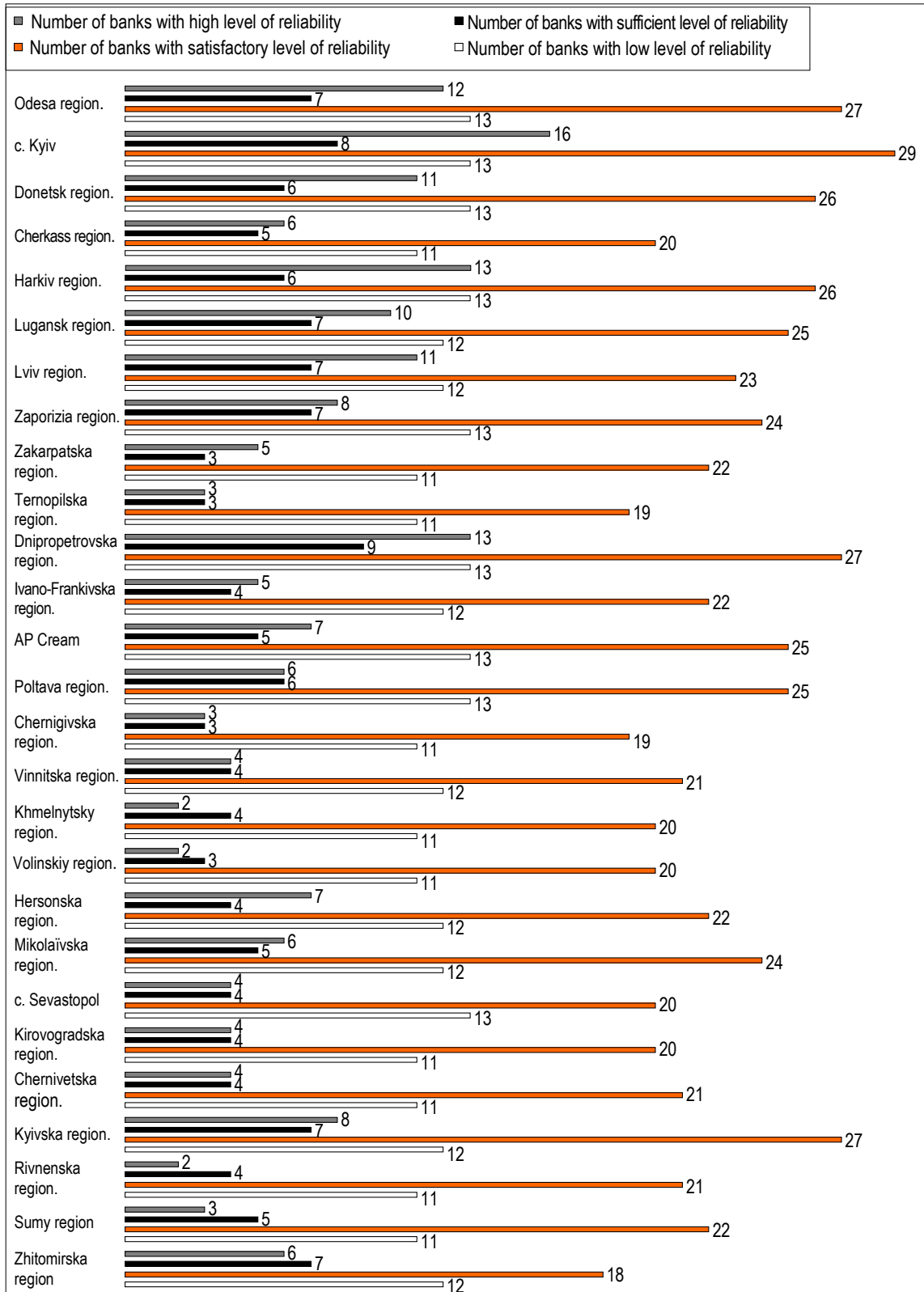
**Fig. 5. Top regions in the number of banking institutions and the level of credit unions**

*Table 2*

**Threat Level of Competitive Environment for Commercial Banks**

Low	Average	High
Kherson region, Mykolaiv region, Sevastopol, Kirovograd region, Chernivtsi region, Kiev region, Rivne region, Sumy region, Zhytomyr region	Ternopil region, Dnipropetrovsk region, Ivano-Frankivsk region, the Crimea, Poltava region, Chernihiv region, Vinnitsa region, Khmelnytsky region, Volyn region	Odessa region, Kyiv, Donetsk region, Cherkasy region, Kharkiv region, Luhansk region, Lviv region, Zaporozhye region, Zacarpathian region





**Fig. 6. Rating regions by an integral combined measure of development of credit unions**

The biggest development of credit unions as well as the largest number of banks in terms of reliability is in Odessa region. Zhytomyr region has the lowest level of credit unions but not the least number of banks in terms of reliability.

The greatest threat to credit unions present those commercial banks that have a low or satisfactory level of reliability, because they produce a large number of different loans from an easy delivery system, but can not meet the full range of customer needs in lending, which leads to the fact that credit unions gain dissatisfied customers to their union. This situation economic security of the banks negatively affects.

With the emergence of the financial market more and more credit unions have a negative impact on the economic security of banks both of each individual bank and the entire banking system.

**Conclusion.** Models of estimating and analyzing the competitive environment are built on the basis of researching Ukrainian credit unions and are developed for each region of Ukraine that allowed to reveal the presence of the biggest threat to the economic security level of commercial banks in Odessa region, and the lowest in Zhytomyr. Kharkiv region takes the 5th place in the ranking in terms of threats in competitive environment. Credit unions threat most those commercial banks that have a low or satisfactory level of reliability. The results of implementing models of multivariate analysis methods in researching the level of commercial banks economic security in Ukraine are the basis for developing common strategies of economic security management of the Ukrainian banking sector.

Implementation of the developed set of models of analyzing of the competitive environment of the banking economic security and its results in the practice of commercial banks will enable raising the level of grounding managerial decisions concerning formation of strategic alternatives to maintain the commercial banks viability and facilitate increasing its efficient activities.

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#### *Анотація*

У статті розроблено комплекс економіко-математичних моделей багатовимірного аналізу конкурентного середовища економічної безпеки банку, реалізація якого дозволить підвищити рівень управлінських рішень щодо формування стратегічних альтернатив розвитку та підвищення ефективності діяльності. В основі реалізації моделей оцінки та аналізу конкурентного середовища дослідження стану кредитних спілок України та динаміки їх розвитку для кожного регіону України.

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