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RISK ASSESSMENT OF USING BANKS FOR MONEY LAUNDERING

Summary

The paper presents analytical tools for identifying the level of risk using banks for the money laundering. There was drawn a conclusion that the riskiest transactions in terms of legalization of criminal assets are cash transactions and operations related to receiving or providing financial assistance. Despite the liquidation processes and significant losses, the inflow of capital structure to the banking system continues. The paper presents results of statistical analysis of the level of bank's reliability and capital structure. It is established that the risk of the legalization of criminal incomes is closely related to the operational risk of banks. According to the results of clusterization of all functioning banks of Ukraine, three groups of banks were identified by the operational risk and reliability rating criteria – with a low, medium, and high risk of the legalization of proceeds from crime. Results display that the vast majority of Ukrainian banks have a high level of money laundering risk.

Introduction

The issues of counteraction to money laundering are one of the most important components of national security. This fact is becoming more essential when we take into account Ukraine's high vulnerability to the risk of criminalization of proceeds and financing of terrorism. Thus, according to the Basel Institute's anti-prudential index, which includes the risk of money laundering and terrorist financing, the risk of corruption, financial transparency and standards, public transparency and accountability, political and legal risks, Ukraine is among the 15 most risky countries in Europe and Central Asia [1].

Trends in the widespread use of money-laundering operations (ML) also increase the risk of attracting banking institutions to the process of legalizing criminal incomes. To counteract these risks, the risk-oriented approach, as declared in the international FATF standards, is aimed at identifying the risks of money laundering and developing a system for their prevention and minimization.

The problem of a risk-based approach implementation is a modern trend in counteracting money laundering. The essence of foreign scientists papers is the aspect of analysing money laundering instruments and identifying restrictions on the existing mechanism of counteraction to ML [2], establishing a connection between the acquisition of values and money laundering and the study of the effectiveness of measures for situational prevention of crimes related to ML [3], assessment and definition of customer risk levels in relation to ML within the framework of implementing a risk-based approach [4], studying the concept of terrorist financing, the interconnection between ML and terrorist financing and management methods of the risk of terrorist financing [5].

Ukrainian scientists are also actively working on the development of a risk assessment and risk management system in the aspect of ML. O. Glushchenko, I. Semengan devoted their research to applying the risk-oriented approach to a financial monitoring system of banks and prospects for its implementation, as well as analysing the connection of the shadow economy with illegal income laundering [6]. Also O. Glushchenko, I. Semengan developed proposals for the evaluation and modelling of risks in the field of anti-legalization of financial monitoring [6]. The monograph [7] proposes a method to assess intrabank risks of using banking services and their departments for the legalization of criminal incomes or terrorist financing. The paper [8] complemented the classification of risks in the area of combating the legalization of proceeds from crime. S. Leonov and O. Kurishko identified the main types of risks of clients and banks in the process of conducting financial transactions and structured the criteria for risk assessment in the system of counteraction to the legalization of funds obtained illegally [9]. N. Moskalenko and N. Klimchuk have investigated approaches to preventing and minimizing the risks of money laundering in banking institutions [10]. The work [11] systematizes the peculiarities, advantages, and principles of the risk-oriented approach implementation and classifies the general criteria for the risk of money laundering. The paper [12] substantiates the risk criteria of using the bank to legalize criminal incomes, the procedure for its evaluation, and measures for limiting or reducing it.

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Along with the availability of approaches to the assessment and management of money laundering risks, it should be noted that the analytical tools for identifying the level of banking risks based on information available criteria are not sufficiently developed since existing risk assessment methods are based mainly on data that constitutes banking secrecy.

Part 1. Governmental Mechanism of Money Laundering Risks Assessment

According to Article 1 of the Law of Ukraine "On Prevention and Counteraction of the Money Laundering, Terrorist Financing and Financing of the Proliferation of Weapons of Mass Destruction", a national risk assessment refers to a system of measures undertaken by the entities of the state financial monitoring authorized by with the involvement of other entities in order to identify the risks of money laundering and terrorist financing, their analysis, evaluation and development measures aimed at preventing and reducing of negative effects [13].

A bank should carry out the classification of its clients independently; following the risk criteria set by the Ministry of Finance and the National Bank of Ukraine (NBU), take preventive measures against clients, whose activities indicate an increased risk of such financial transactions. The bank establishes a high level of risk for clients in the cases indicated in Fig. 1.1.
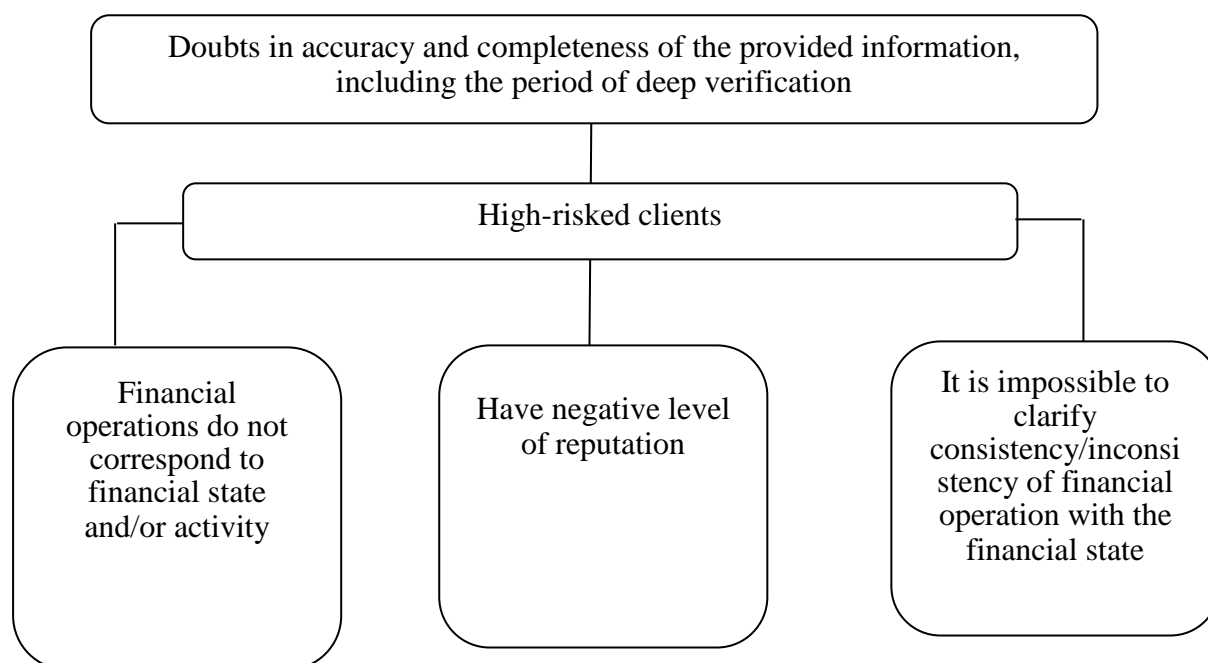

**Fig. 1.1. Criteria of classifying the clients
as one with the high-level risk of money laundering**

Source: built according to [14]

As it can be seen in Fig. 1.1, a bank client may receive a risk status in several cases, in which risk assessment takes into account not only current transactions but

also the history of previous transactions, credit history, and any other personal data of the client that are in their reputation.

In 2015, the Law of Ukraine "On Changes to Certain Legislative Acts of Ukraine Regarding Liability of Persons Related to the Bank" [15] was adopted, which increased the powers of the NBU among the requirements of banks for the detection and reduction of excessive concentration risks arising from lending-related persons to the bank.

The NBU applied measures of influence on banks in case of non-disclosure of their ownership structure in the manner prescribed by the requirements of the NBU. At present, the Regulation "On the Procedure for Submission of Information on the Bank Ownership Structure" regulates the procedure of disclosure of ownership structure. The disclosure of the ownership structure means the showing of information about individuals who control the financial result of the activities of the bank, rather than formal data [16].

As of June 1, 2016, the structure of 79 out of 119 banks was completely transparent. The investigation of the ownership structure of 40 banks was conducted, among them, 13 banks were officially recognized by the NBU as non-transparent.

According to the national risk assessment, the overall level of risk is defined as the multiplication of the risk assessment and the probability of its occurrence, where "1" indicates a low probability of occurrence of the risk or its minor effects, and "4" is about very serious consequences or high probability of money laundering. After estimating the overall level of risk, existing measures are developed and evaluated to prevent or reduce this risk according to their effectiveness, and determine the vulnerability to this risk and the net risk level.

The next stage of the national risk assessment is the calculation of the net risk level calculated as the difference between the marks of the pre-calculated general risk level and the effectiveness of the available measures.

Table 1.1 provides summary data on the risk assessment of using banking operations for money laundering in the context of banking transactions, which were distributed by the State Financial Monitoring Service of Ukraine analysts to risk levels.

Table 1.1

Risks of using banking operations for money laundering

Banking operations	Risk level		
	low	middle	high
Private-banking	26%	57%	17%
Payment for the international trade operations	12%	52%	36%
Correspondent account	52%	40%	8%
E-banking	8%	60%	32%
Other	19%	52%	29%

Source: [14]

As it may be drawn from Table 1.1, low level of risks matches with correspondent accounts, middle – to both e- and private-banking and payment for the international trade operations.

The most active in the reporting system in the context of entities of initial financial monitoring are banking institutions that send the bulk of notifications of operations subject to financial monitoring. Within the framework of the national risk assessment, information on the most commonly reported suspicious financial transactions by the responding banks has been further verified and analysed.

During the 1st quarter of 2018, State Financial Monitoring Service of Ukraine received and processed 2 159 920 reports about financial operations, which are to be monitored (Fig. 1.2).
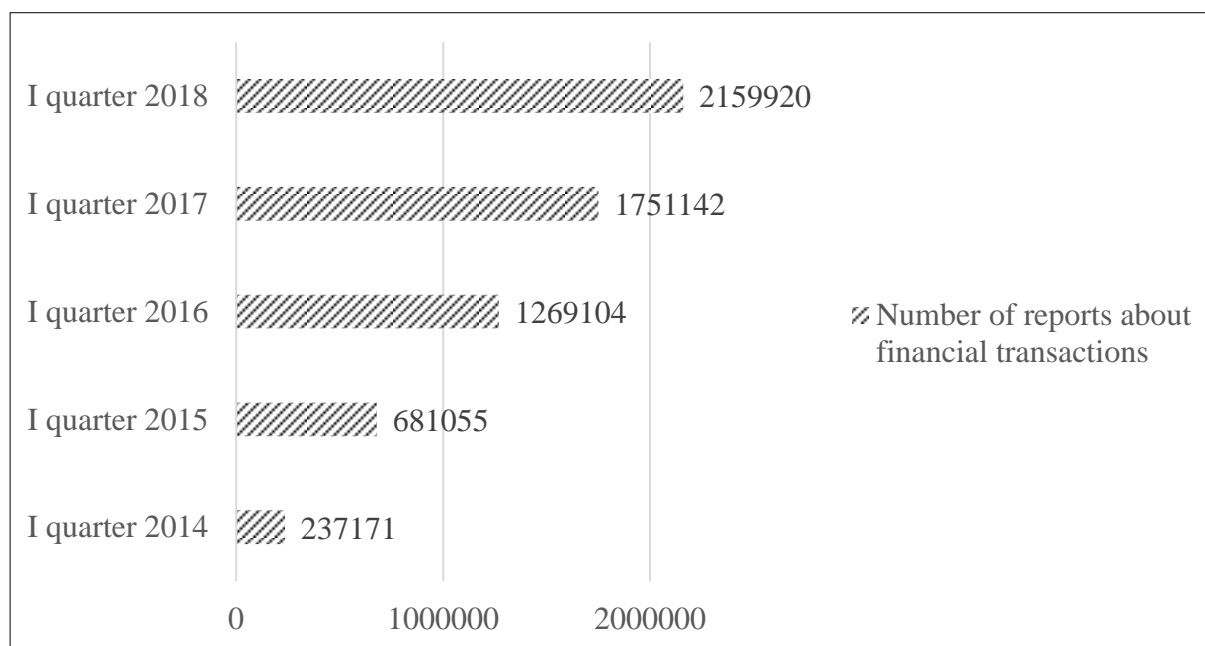

Fig. 1.2. Dynamics of reports about financial operations
Source: [14]

Returning to the questions of the effectiveness of the functioning of state mechanisms of income reduction, it is considered relevant to conduct an analysis of the state of processing information about financial transactions, which have to be monitored or information that may be related to money laundering or terrorist financing [17].

As it can be seen in Fig. 1.2, during the first quarter of 2018, 2 159 920 reports about financial transactions in the aspect of money laundering were received by the State Financial Monitoring Service of Ukraine. That is more by 23.34% than in the same period in 2017 and more by 70.19% than in the 1st quarter of 2016. The most active in the reporting system by the entities of initial financial monitoring are banks that send the bulk of the notifications of operations in the aspect of money laundering, which is quite clearly seen in Fig. 1.3.

During the 1st quarter of 2018, banks sent 99.12% of the total number of notifications of financial transactions. For the same period in 2017, banks submitted 98.96% of the total amount of communications, and in 2016 – 99.04%. This tendency shows that in the non-banking sector, the system of monitoring money laundering operations is rather poorly developed.

At the same time, the share of errors in communications is only 0.07% of the total amount received by the State Financial Monitoring Service of Ukraine during the 1st quarter of 2018 notifications of financial transactions. The percentage of notifications of financial transactions submitted by the entities of the primary financial monitoring to the State Financial Monitoring Service of Ukraine is correct, which includes 99.93% of the total number of messages.
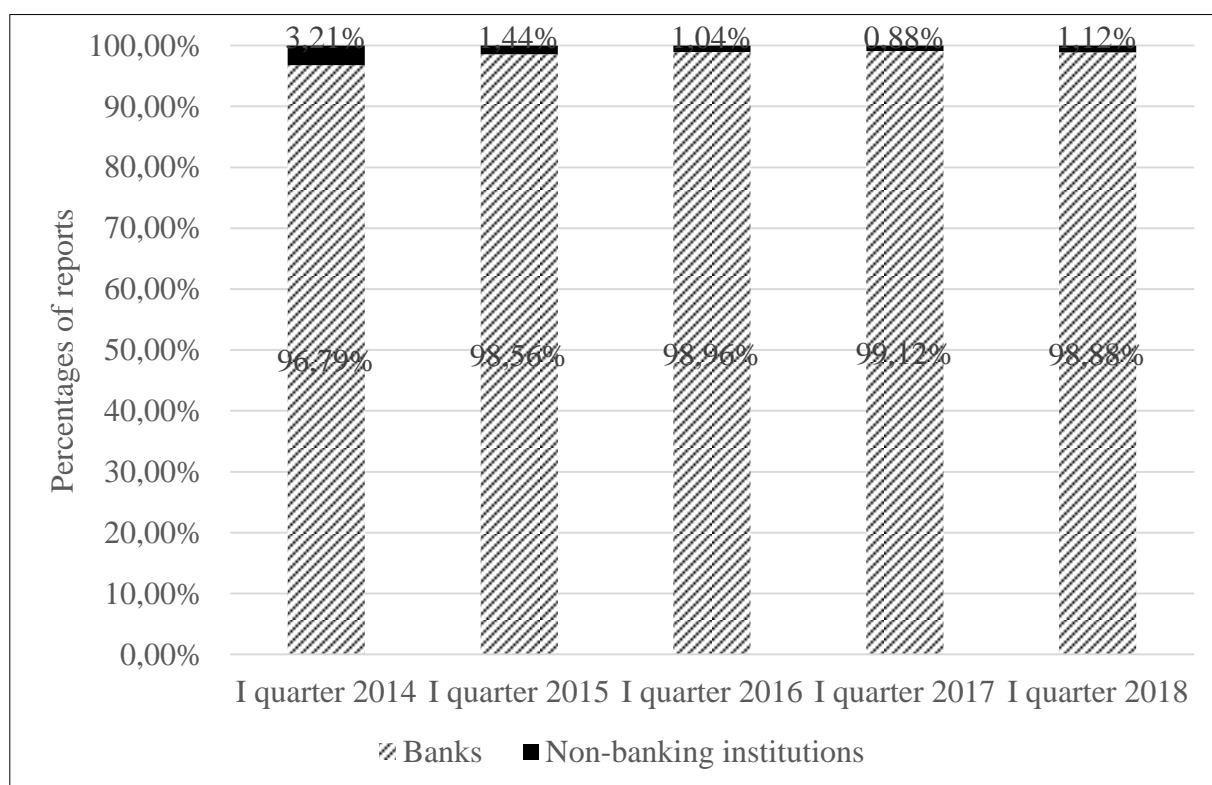

Fig. 1.3. Dynamics of reporting about financial transactions in the context of subjects of initial financial monitoring for 2014–2018 years
Source: [14]

Messages of suspicious financial transactions to the State Financial Monitoring Service of Ukraine service can be submitted in paper and electronic form. The dynamics of the number of reports registered by the State Financial Monitoring Service of Ukraine during the 1st quarter of 2018 submitted by banks and non-banking institutions, in terms of types of representation, is given in Table 1.2.

Table 1.2

**The number of reports registered by the State Financial Monitoring Service
of Ukraine during the I quarter of 2018 submitted by banks
and non-banking institutions, in terms of types of reporting [14]**

Type of institutions	Number of e-reports	Number of reports in paper form
Banks	2 120 689	0
Non-banking institutions	23 951	71

As it can be seen from the data in the table, the subjects of initial financial monitoring prefer to provide electronic reports. Thus, during the third quarter of 2017, 99.99% of all reports were submitted electronically, which significantly accelerates the period of their processing and decision-making in each individual case. However, in 2017, the number of notifications of financial transactions that were received and taken into account by the State Financial Monitoring Service of Ukraine of non-bank institutions in paper form increased by 12.87% compared to 2016.

Among non-banking institutions, the insurance sector is the most active in terms of the number of filing requests. The share of reports of suspicious financial transactions from insurance companies in the total number of accounting records of financial transactions received by the State Financial Monitoring Service of Ukraine from the non-banking sector amounted to 79.68%.

The distribution of the accounts registered with the State Financial Monitoring Service of Ukraine during the I quarter of 2014–2018, in the context of features of financial monitoring provided by the entities of the initial financial monitoring, is shown in Fig. 1.4.

During the first quarter of 2018, reports with signs of mandatory financial monitoring were received – 95.66%; with signs of internal financial monitoring – 3.42%; with signs of obligatory and internal monitoring – 0.89%; monitoring of financial transactions – 0.03%.

The State Financial Monitoring Service of Ukraine, under its authority, collects, processes, and analyses information on financial transactions, which are monitored, other financial transactions or information that may be related to suspicion of money laundering. Also, the State Financial Monitoring Service of Ukraine conducts a comprehensive analysis of the information received and identified financial flows in various sectors of the financial market. Primary analytical processing of information is carried out in the analytical segment of the Unified Information System for Financial Monitoring [17, p. 129].

All received messages are classified according to the degree of risk and subject to a thorough analysis taking into account all available information. Due to this analysis, a dossier for conducting a financial investigation is created. The dossier is analysed in relation to the identification of grounds for believing that a financial transaction may be related to the money laundering or the financing of terrorism, or related to the commission of another act, as defined by the Criminal Code of Ukraine.
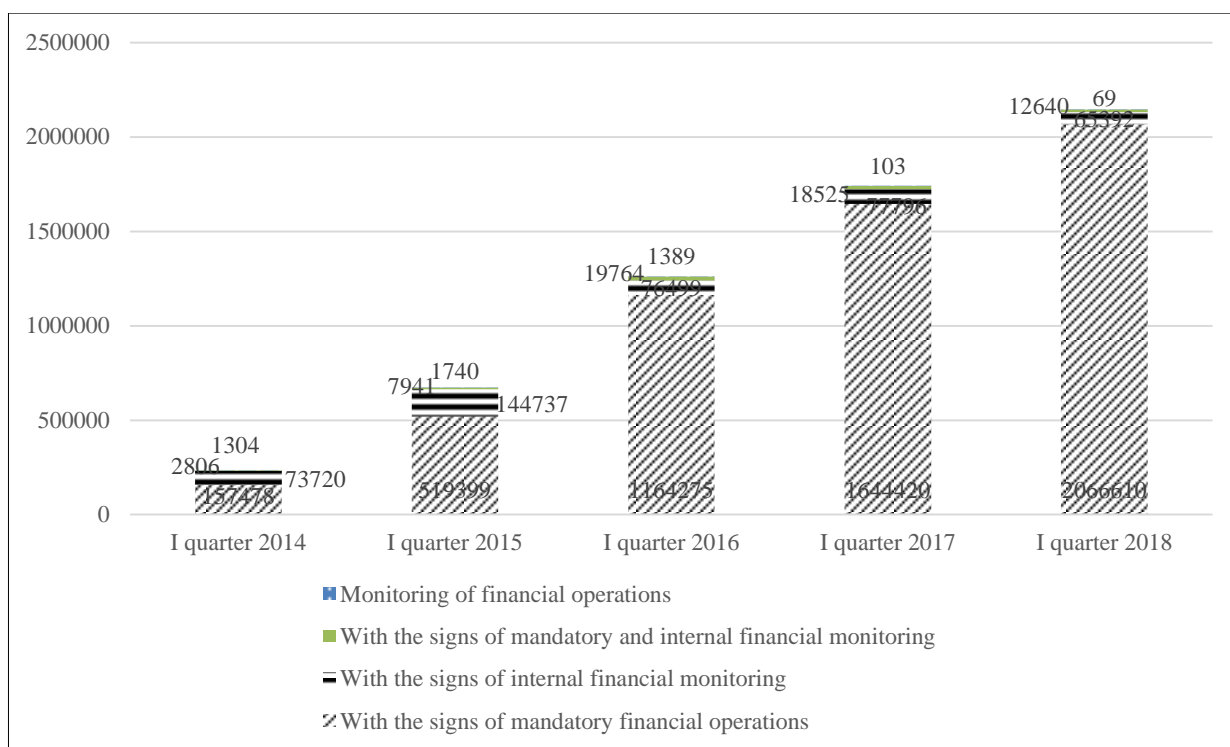
Fig. 1.4. Distribution of messages in the context of features of financial monitoring, which were taken into account by the State Financial Monitoring Service of Ukraine during the first quarter of 2014–2018

Source: [14]

Thus, in recent years, there has been a tendency in Ukraine to increase the number of cases of the legalization of proceeds from crime. The riskiest transactions in terms of legalization of criminal funds act as cash transactions and transactions associated with receiving or providing financial assistance.

The state strategy in the field of counteracting the legalization of incomes should be aimed at creating such conditions, in which the economic effect of the legalization of criminal incomes is higher than the costs incurred in its organization.

Part 2. Analysis of the Trustworthiness of the Ukrainian Banking System in the Context of Its Using For Criminal Incomes Legalization

Operations on money laundering have a significant negative impact on all subjects of financial and economic activity, in particular, on the banking sector. Banking business, like any kind of economic activity, is subject to the general laws of the market and is vulnerable to numerous threats and risks. Opposing the process of eliminating illegal funds into the legal presence of the market is a task not only of the banking sector. However, banks themselves have the highest risk of using them as key players in the process of legalizing criminal incomes, since banks are central to the financial system and, therefore, a significant part of money laundering schemes is associated with banking transactions. At the same time, the banking sector is becoming more and more attractive not only for traditional but

also virtual schemes, because of the introduction of financial innovations and the intensification of electronic money settlements [18].

Money laundering risks are a type of banking risk, and the ability to oppose them is largely determined by the reliability of banks, which in turn depends on the volume and structure of equity capital. The problem of capitalization of banks has always been acute in Ukraine. For all 25 years of independence of Ukraine, the share capital of the banking system in general did not exceed 35%, while in Central Europe this figure reached 40%, and in the USA – 80%.

In July 2014, the National Bank of Ukraine increased the requirements for the authorized capital of banks from 120 to 500 million UAH. For this purpose, a 10-year capital increase schedule for the banking system was developed and implemented. This step will allow increasing the stability of banks to manifestations of external and internal risks and threats, which will positively affect the functioning of the financial and credit system.

By July 2014, the amount of authorized capital of banks was regulated by the NBU at the level of 120 million UAH. According to the Law of Ukraine "On Amendments to Certain Legislative Acts of Ukraine on Prevention of the Impact on the Stability of the Banking System" dated July 4, 2014, No. 1586-VII [19], the volume of the minimum authorized capital has been changed from 120 to 500 million UAH. The NBU approved the schedule of a capital increase by the banks of Ukraine in the following order (Fig. 2.1).
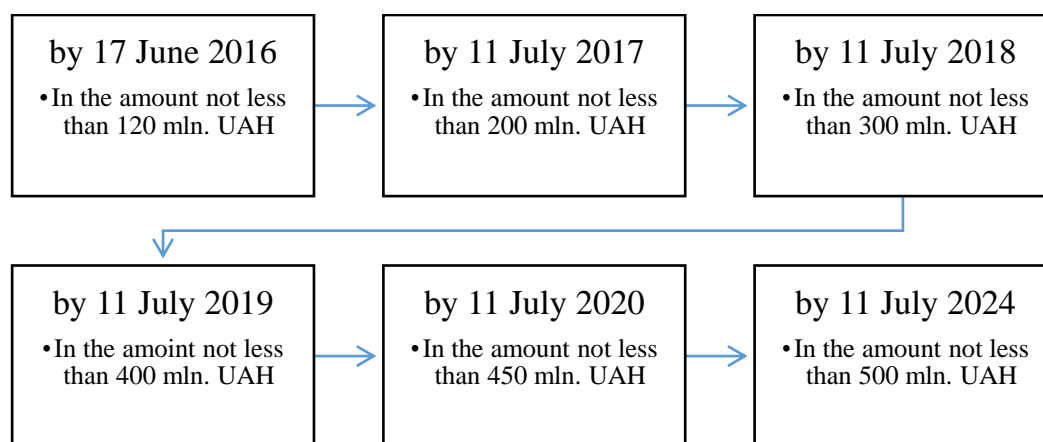
by 17 June 2016	by 11 July 2017	by 11 July 2018
•In the amount not less than 120 mln. UAH	•In the amount not less than 200 mln. UAH	•In the amount not less than 300 mln. UAH

by 11 July 2019	by 11 July 2020	by 11 July 2024
•In the amoint not less than 400 mln. UAH	•In the amount not less than 450 mln. UAH	•In the amount not less than 500 mln. UAH

Fig. 2.1. The system of banking capital increase in Ukraine

Source: built on the basis [19]

The main macroeconomic factor that caused changes in the requirements for the authorized capital was the crisis of 2014–2015 and the signing of an agreement on the Association of Ukraine with the European Union.

It should be noted that the idea of increasing the authorized capital to 500 million UAH was announced by the NBU in 2010. However, first of all, small banks have challenged such a decision, arguing that it is not able to capitalize so rapidly due to the lack of available funds. You can agree with this position, as the NBU and the National Securities and Stock Market Commission have not created

at that moment (today's situation remains) any instruments for hedging foreign exchange risks. And the increase in authorized capital with a high probability could be realized mainly through the mechanism of attracting foreign capital.

The dynamics of the ratio of the number of registered banks and the amount of their authorized capital is shown in Fig. 2.2.
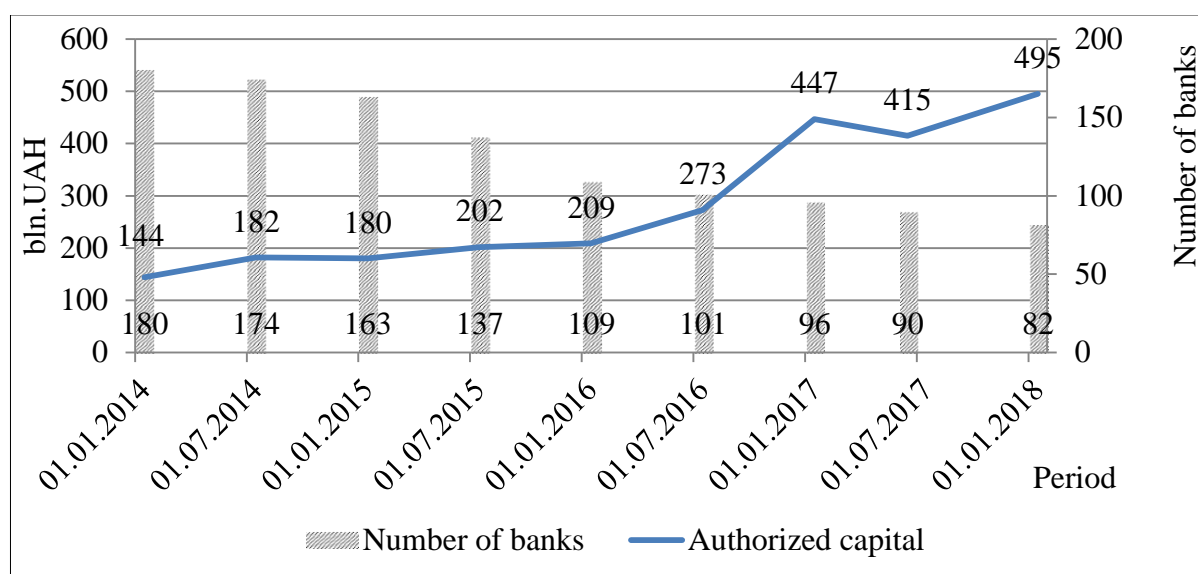

**Fig. 2.2. Dynamics of the ratio of the number
of Ukrainian banks and their authorized capital**

Trends indicate a gradual increase in the level of capitalization of Ukrainian banks due to an increase in the authorized capital with a decrease in the number of banks.

There are several options for a possible increase in the capital of Ukrainian banks. Firstly, it is expedient to use the investments of bank owners, for example, the funds of shareholders that are ready to invest in development. Secondly, it is important to involve a subordinated debt (borrowed funds, which, within 5 years, the bank is obliged to return to its own creditors). Thirdly, the possible option is the conversion of credit lines previously used by shareholders or partners. This mechanism is most actively used since 2015. Thus, the owners of the bank allow shareholders not to return the loans received. Banks with foreign capital operate in such a way – foreign shareholders account to the capital loans, which are not returned by Ukrainian subsidiaries. If a third party who lent to a Ukrainian subsidiary bank was involved in the lending process, then a loan repayment on the bank's shares is being exchanged. This approach was used by the European Bank for Reconstruction and Development. The fourth way of capital increase is the ordinary additional issue of shares placed among new shareholders. However, there is another variant of the development of events – the activation of merger and acquisition procedures, but the necessary legislative and regulatory framework has not yet been created.

Analysis of the dynamics and structure of equity capital of Ukrainian banks is presented in Table 2.1 according to the type of ownership over 2016–2017 in the form of a half-year.

Table 2.1

Analysis of dynamics and capital structure of Ukrainian banks

Indicator	Weight				Growth ratio		
	01.01. 2016	01.07. 2016	01.01. 2017	01.07. 2017	1 half-year 2016	2 half-year 2016	1 half-year 2017
1	2	3	4	5	6	7	8
Banks with governmental interest							
Authorized capital	7,44	3,37	3,43	4,72	0,22	0,63	1,02
Another extra capital	-0,18	-0,07	-0,04	0,17	0,00	0,00	- 6,99
Provisions and other funds of the bank	0,08	0,03	0,06	0,12	0,00	2,35	1,98
Retained earnings (uncovered loss)	-6,39	-2,42	-5,04	-4,19	0,02	2,34	0,22
Total capital in state-owned banks	0,09	0,16	0,31	0,41	1,68	0,60	0,47
Banks with foreign capital							
Authorized capital	9,77	5,73	3,80	2,68	0,57	0,07	0,04
Another extra capital	0,21	0,08	0,05	0,03	-0,01	0,06	-0,05
Provisions and other funds of the bank	0,71	0,27	0,17	0,14	0,03	0,01	0,18
Retained earnings (uncovered loss)	-11,06	-4,54	-3,10	-2,37	0,10	0,10	0,13
Total capital in state-owned banks	0,34	0,45	0,51	0,44	1,01	- 0,03	-0,05
Banks with private capital							
Authorized capital	4,98	1,75	0,55	0,39	-0,06	-0,50	0,04
Another extra capital	0,02	0,01	0,01	0,00	0,31	0,81	-0,74
Provisions and other funds of the bank	0,55	0,19	0,08	0,05	-0,08	-0,36	-0,04
Retained earnings (uncovered loss)	-0,38	-0,04	-0,18	-0,11	-0,69	5,71	-0,13
Total capital in state-owned banks	0,55	0,37	0,18	0,18	0,01	-0,58	0,09
Insolvent banks							
Authorized capital	1,87	0,69	0,45	0,28	-0,02	0,04	-0,07
Another extra capital	-	-	0,00	-	-	-	-1,00
Provisions and other funds of the bank	0,08	0,03	0,02	0,01	-0,06	0,14	-0,14
Retained earnings (uncovered loss)	-1,89	-0,65	-0,46	-0,35	-0,08	0,15	0,10
Total capital in state-owned banks	0,01	0,02	0,01	-0,02	0,81	-0,56	-3,35
Banking system							
Total capital in banking system	1,00	1,00	1,00	1,00	0,52	- 0,14	0,11

Source: built by the authors

As it can be seen from Table 2.1, the equity capital of state-owned banks has a steady upward trend, which has been clearly traced over the past two years, and at the end of the first half of 2017 is 56 billion UAH, which corresponds to 41% of Ukraine's total bank capital. There is a significant increase in the amount of authorized capital: during 2016–2017, it grew three times and continues to grow. This is mainly due to the nationalization process of PJSC "Privatbank" at the end of 2016 – the beginning of 2017.

The next rather large category is the banks belonging to foreign banking groups. 25 banks of these types were registered; their capital amounted to 44% of the total capital of Ukrainian banks. These banks are also continuing to increase their authorized capital, but significantly more slowly – only 4% during the first half of 2017 compared with 57% for the first half of 2016. Banks of foreign banking groups are quite reliable and powerful and do not require a significant inflow of funds from parent groups, even though the volume of losses increased to 118.2 billion UAH to 132.9 billion UAH in 2017, which is 13% more than during the 2nd half of 2016.

In comparison with previous groups, Ukrainian banks have experienced a significant reduction in the capital: as of July 1, 2017, it amounted to only 18% of total bank capital. There was a negative tendency to reduce the authorized capital by the beginning of 2017 by more than 50% due to the liquidation of more than 20 banks in this category.

However, banks with private capital are the only group of banks, which shows a positive dynamics to reduce losses in the first half of 2017 by 0.13%. It leads to the success of the process of clearing the banking system of Ukraine from insolvent and illegitimate banks.

A special group of banks is insolvent banks. They are characterized by significant losses that exceed the authorized capital by 3.6 billion UAH and have a negative tendency to increase the volume of losses by 10% during the last half-year. Most of these banks are liquidated because of their inability to meet their obligations to customers.

Separately, it should be noted the growth of reserve funds, which make up 12.98% of the total capital. These processes are more active in state-owned banks – their reserves increased by 197.61%. A slightly slower pace with regard to the creation of reserves and funds is characterized by banks with foreign capital – 18%. However, the current tendency to increase the amount of reserves indicates the efforts of most banks to create a protective barrier in the case of deterioration of the financial situation.

The analysis of the dynamics of banks' capital structures during the period of 2016–2017 in the form of a half-year shows that, despite the liquidation processes and significant losses, the inflow of capital to the banking system of Ukraine continues.

Since the manifestations of the risk of money laundering in banks may be reflected in the loss of business reputation and, consequently, their reliability and financial sustainability, it is of practical interest to determine the level of reliability

of Ukrainian banks. For this purpose, homogeneous groups of banks of Ukraine should be distinguished according to the level of reliability, formulating the composition of its main indicators beforehand. As characteristics of bank reliability are distinguished: liquidity [20; 21]; capital adequacy [20; 22]; asset quality [20; 21].

Considering this, the following indicators were used for the grouping of Ukrainian banks by the level of reliability:

– Quick Liquidity Ratio, which characterizes the ability to pay cash from correspondent accounts and cash deposits on all deposits;

– the ratio of equity to earning assets, which characterizes the level of protection of returnable assets (sensitive to changes in interest rates);

– the ratio of the loan portfolio to provisions for loan impairment. It should be noted that, traditionally, the ratio of provisions for loan impairment to the loan portfolio is used to characterize the asset's quality. However, taking into account the economic interpretation of the indicator and ensuring unidirectionality with the preliminary indicators (that is, the higher they are, the higher and the reliability of the bank), the ratio of the loan portfolio to reserves is used.

Indicators were calculated for 93 banks of Ukraine, which functioned as of 01.01.2017, after which it was confirmed that there is no close correlation between these indicators (Table 2.2).

Table 2.2

Coefficients of pair correlation between indicators

Indicator	Ratio of equity to earning assets	Quick liquidity ratio	Ratio of loan portfolio to provisions
Ratio of equity to earning assets	1,000000	-0,063938	0,321295
Quick liquidity ratio	-0,063938	1,000000	-0,018816
Ratio of loan portfolio to provisions	0,321295	-0,018816	1,000000

Source: built by the authors

All reliability indicators were checked for informational value using the coefficient of variation, which characterizes the degree of deviation of the calculated values of the indicators from the arithmetic mean, which was: for the ratio of equity to working assets – 72.37%; for the coefficient of instant liquidity – 57.59%; for the ratio of loan portfolio to reserves – 119.83%, which indicates the heterogeneity of the initial population. Since certain banks are characterized by a significant deviation of the calculated values of the indicators from the average arithmetic due to the peculiarities of their activity, these banks were excluded from the sample to avoid emissions in the sample and obtain homogeneity, after which the final sample was 77 banks.

For banks: Ukrainian Bank for Reconstruction and Development, PJSC "PAYMENT CENTRE", PJSC "CITIBANK", PJSC "Deutsche Bank DBU", PJSC "SEB CORPORATE BANK", PJSC "CREDITWEST BANK", JSC "ALBBANK", PJSC "ALPARI BANK", PJSC "KB FINANCIAL PARTNER", PJSC "BTA Bank", PJSC "FINBANK", PJSC "RVS BANK", PJSC "CREDIT OPTIMA BANK", PJSC "CB GEFEST", PJSC "BANK SICH", PJSC "DAVI BANK" are characterized by a significant deviation of the calculated values of indicators from the average arithmetic due to differences in their activities, namely: the Ukrainian Bank for Reconstruction and Development provide bank services and products to enterprises engaged in innovation activity; the exclusive competence of PJSC "PAYMENT CENTRE" is to carry out cash settlements for securities and other financial instruments executed on the stock exchange and outside the stock exchange; PJSC "CITIBANK" specializes in certain sectors of the market and clients through its membership in the international financial group Citigroup; PJSC "DEUTSCHE BANK DBU", PJSC "SEB CORPORATE BANK" and PJSC "BTA Bank" specialize exclusively in corporate clients; JSC "ALBBANK" provides a range of banking products and services with the help of remote channels; the basic clients of PJSC "ALPARI BANK" are representatives of modern high-income business, as well as individuals of medium and bigger prosperity; PJSC "RVS BANK", PJSC "CREDIT OPTIMA BANK" and PJSC "CB GEFEST" have a small amount of own capital in comparison with profitable assets; PJSC "FINBANK" during 2016 has problems with solvency, and since April 2017 it was in the stage of liquidation.

For the distribution of Ukrainian banks by the level of reliability, the method of cluster analysis is used in the paper, the purpose of which is to classify objects into relatively homogeneous groups. The information contained in the data that describes these objects is the basis for cluster analysis. The purpose of the analysis is the formation of groups, within which the objects must be as similar to each other, at the same time differing from the objects of other groups. Therefore, among the groups of methods of cluster analysis agglomeration (uniting) was chosen. The higher the degree of similarity within a group and the greater the difference between groups, the higher the quality of clustering. Distinguish hierarchical and iterative classification procedures [23].

The essence of hierarchical procedures is to combine the two closest units of the population. The basis for such analysis is the matrix of distances. At the first stage of the merger, all objects are considered as separate clusters. After each stage, the matrix's dimension is reduced by one. Complete clustering of n objects takes place for (n-1) stages. Results of hierarchical classification procedures are executed in the form of tree-like diagrams – dendrograms. The dendrogram reflects the hierarchy of structures since each cluster can be seen as an element of another, with a larger distance value. The hierarchical cluster procedure is simple and acceptable for interpretation, but for a large aggregate of data, it is cumbersome.

Unlike a hierarchical procedure that requires the calculation and preservation of a matrix of similarity, the iteration procedure operates directly with the primary data,

which significantly distinguishes it from the hierarchical procedure. As a result of the iteration procedure, clusters of the same rank are formed that are not hierarchically ordered. This procedure can be considered on the example of the k-medium method, which implements the idea of group formation on the basis of the "closest centre". The main stages of clusterization by this method are the following: 1) the approximate division of the population into classes and the definition of their centres of attraction, that is, multidimensional averages; 2) determination of the distance of aggregate units to the centres of attraction of the selected clusters, and each of them belongs to the cluster, the centre of gravity of which is closest; 3) calculation of new centres of gravity. Stages 2 and 3 are repeated until the composition of the clusters is stabilized. Iterations based on the k-medium minimize in-group dispersion, which ensures homogeneity of the formed clusters.

Thus, in the conditions of a large number of banking institutions in the financial market, given that the number of groups of banks is known (it meets three levels of reliability: high, medium, and low), it is more expedient to use the iterative procedures by k-medium.

The classification procedure was implemented using the Cluster Analysis module of the Statistica 8.0 package. As variables for analysis, the values of the ratio of equity to earning assets and the ratio of the loan portfolio to reserves, as well as the quick liquidity ratio were used. At the next stage of the cluster analysis, you must select the number of clusters. As noted above, banks need to be divided into three levels of reliability, so exactly the number of groups of banks was chosen for the cluster analysis procedure.

The procedure for the classification of 77 banks by means of k-means allowed receiving groups, each of which is characterized by certain levels of the indicated indicators, inherent in each level of reliability. The clusterization quality is illustrated with the data in Table 2.3.

Table 2.3

Characteristics of clustering of Ukrainian banks by reliability indexes

Indicators of trustworthy to banks	Intergroup variance	Freedom degree	Intragroup dispersion	Freedom degree	F-criteria	p-level significance of F-criteria
Ratio of equity to earning assets	0,28	2	10,8	74	0,975	0,381917
Quick liquidity ratio	10584,83	2	5727,28	74	63,381	0,00000
Ratio of loan portfolio to provisions	7069,42	2	3946,44	74	66,28	0,00000

Source: built by the authors

Intergroup and intragroup variance characterize clusterization level, F-criteria reflect the contribution of each sign in the distribution of objects into groups: the

greater its value is, the greater the contribution makes a feature in the classification of objects. Given that the p-value of the F-criterion for the ratio of equity to working assets is greater than 0.05, this indicator is not significant for clustering. Therefore, the next clusterization is carried out using two parameters: the quick liquidity ration and the ratio of loans to provisions (Table 2.4).

Table 2.4

Characteristics of clustering of Ukrainian banks by reliability indexes

Indicators of trustworthy to banks	Intergroup variance	Freedom degree	Intragroup dispersion	Freedom degree	F-criteria	p-level significance of F-criteria
Quick liquidity ratio	10457,00	2	5859,283	74	66,033	0,00000
Ratio of loan portfolio to provisions	7182,47	2	3827,147	74	69,439	0,00000

Source: built by the authors

Following the procedure of classification by the k-means method, we obtain groups of banks with certain levels of the indicated indicators inherent in each level of reliability (Fig. 2.3).

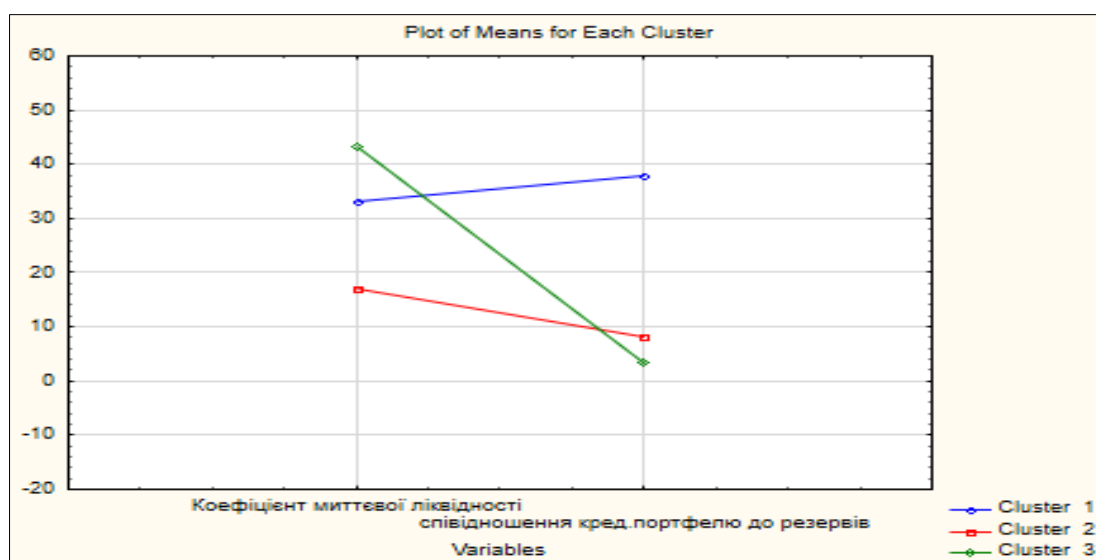**Fig. 2.3. Average weight in the clusters**

Source: built by the authors

The economic interpretation of clusters by the values of the quick liquidity ratio and the ratio of loans to provisions, which are characteristic of each level of reliability, made it possible to establish that the first cluster was formed out from 8 banks with a high level of reliability, the second cluster represented by 49 banks

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with an average reliability level, in the third cluster there are 20 banks with a low level of reliability (Table 2.5).

<div align="right">Table 2.5</div>

The level of trust in Ukrainian banks

Cluster	Average weight		Level of trustworthy
	Quick liquidity ratio	Ratio of loans to provisions	
Cluster 1 (8 banks)	33,13	37,74	high
Cluster 2 (49 banks)	16,89	8,24	middle
Cluster 3 (20 banks)	43,32	3,38	low

Source: built by the authors

Banks of the first cluster have a high level of reliability since the average values of both reliability indices in this group were the highest: for the quick liquidity ratio, the average value was 33.13, for the ratio of the loan portfolio to provisions – 37.74. Banks of the second cluster have an average level of reliability since the average quick liquidity ratio was high (16.89) and the ratio of the loan portfolio to provisions is average (8.24). Banks of the third cluster had the lowest value of the loan portfolio to provisions ratio – 3.38, which indicates the poor quality of assets and causes a low level of their reliability, despite the fairly high value of the quick liquidity ratio.

It should be noted that there is no significant relationship between the ownership structure and the reliability of banks. Thus, a cluster of banks with a high level of reliability is represented primarily by private equity banks that maintain a high level of liquidity combined with low credit risk. To middle-level banks, almost all state-owned banks, a small number of foreign-owned banks and most private-sector banks are included. The cluster of banks with a low level of reliability is formed by banks with foreign and private capital, with foreign banks accounting for 50% of the total number of objects of this cluster. This is due to the fact that, despite the high level of liquidity, these banks have a rather risky loan portfolio. Banks of this cluster are more exposed to the risks of the legalization of criminal incomes.

The existence of a feedback link between the reliability and the risk of money laundering by banks is evidenced by the fact that, following the results of the inspections on prevention and counteraction to the issues of money laundering, terrorist financing and financing of the proliferation of weapons of mass destruction in May 2018, banks that are in low and medium security groups:

1) PJSC "UkrSibbank" applied measures of influence in the form:

– a fine of UAH 400,000.00 for violating the requirements of the legislation on financial monitoring in the part of non-disclosure of the facts of the membership of the bank's clients to public figures, their close persons or persons connected with them; failure to provide the NBU with complete and accurate information in the relevant reports;

– written warning for violating other requirements for the identification, verification and study of clients of the bank, public figures, their close relatives or persons associated with them;

2) to the PJSC "MTB BANK" (till March 5, 2018 – PJSC "MARFIN BANK") the measure of influence was applied in the form of a written reservation for:

– violation of the requirements for the identification, verification and study of the bank's clients, including clients of the bank, national public figures, persons connected with national public figures;

– failure to identify financial transactions as a subject of mandatory financial monitoring;

– improper performance of the duty to provide risk management in their activities and to re-evaluate the risks of clients;

– failure to ensure unobstructed access of the NBU to the documents or information contained therein in full;

– failure to carry out the duty of conducting initial financial monitoring of financial transactions, the participant or beneficiary of whom is a person associated with a national public figure, taking into account the recommendations of the NBU, in accordance with the procedure established for high-risk clients;

– using software that does not automatically detect and stop in the cases of a financial transaction established by law, prior to its execution;

– violation of the order of financial transactions suspension;

3) a measure of influence was applied to PJSC "KREDOBANK" in the form of a written reservation for inappropriate identification of public figures;

4) a measure of influence in the form of a written reservation was applied to Prominvestbank PJSC for failure in identifying financial transactions, which are the subject of mandatory financial monitoring; misidentification of public figures [24].

Thus, the reliability of banks is closely linked to the risk of criminal incomes legalization. According to the analysis, it was found that as of the beginning of 2017, 10% of Ukrainian banks had a high level of reliability and, to a lesser extent, were at risk of money laundering; 64% of banks had an average level of reliability and, accordingly, risk of money laundering; 26% of banks were exposed to significant risk of money laundering.

Part 3. Risk Identification of Banks Attraction
in the Money Laundering Process

The globalization of the financial market, the intensification of international economic ties, the introduction of the latest information technologies, the complication of forms and increased riskiness of financial transactions, increased competition in the banking sector, and the growth of economic crime lead to the emergence of new challenges and threats, as well as increased risks of using banks for criminal revenues legalization.

In modern conditions, the problem of assessing the money laundering risk of the banking sector of Ukraine is becoming increasingly important. Failure to comply with banks' anti-money laundering and terrorist financing requirements

destructively affects the national banking system by increasing the risks of systemic risk and on the economy as a whole in the form of expanding the shadow sector and other negative effects of the legalization of proceeds from crime.

The practice of recent years shows that a banking structure that is incapable or unwilling to use internal control measures to counteract the legalization of proceeds from crime is risking its reputation both in the domestic and international markets. Moreover, the larger the organization – the participant of market relations, the more it should take care of its reputation. Therefore, while focusing on the development of business, in the long run, the owners and managers of the bank cannot fail to take into account the risks arising from the involvement of the bank in the money laundering process or terrorist financing.

The peculiarity of the risk management system for the legalization of criminal incomes is that it should not only take into account specialized information but also anticipate the assessment of other risks and parameters of banking activity. The problem of identifying and assessing money laundering risks is the complexity of their quantitative measurement. In this regard, an indicative risk assessment can be made based on the relationship between the risk of money laundering and other types of bank risks.

Exploring the relationship between the risk of money laundering and typical banking risks, the authors of the monograph [6] state that the risk is associated with operational risk arising from inaccurate, false or criminal acts, errors in internal processes and systems or as a result of external influences. Operational risk is determined by a probability of occurrence of inconsistency between the expenses of a bank for the realization of its operations and their effectiveness. Operational risk arises as a result of a violation of internal procedures and procedures for carrying out banking operations and other agreements by employees of a bank or other persons due to incompetence, unintentional or intentional actions or inactivity.

One of the approaches proposed by the Basel Committee to the estimation of capital under operational risk is the approach based on the main indicator. In accordance with this approach, capital for operational risk is reserved based on the using a single indicator as a sufficient condition to cover the full operational risk [25, 26]. The main indicator is the gross income, while for each bank the amount of capital under operational risk is equal to the level of 15%, multiplied by the size of the gross income of a bank.

If in any given year, the gross income indicator is negative or equal to zero; its value is not included in the calculation of operational risk, with the simultaneous decrease of the number of years by the number of years, the results of which recorded a negative or zero value of income. At the same time, the number of years of calculation is limited in the next three years.

If a bank had all these three years unprofitable, then the operational risk is zero, and not all income is taken into account in the calculation of operational risk, but only those items of income that the bank can predict qualitatively and stably. The article does not include articles on changes in the provision for possible losses, from the revaluation of foreign currency, etc., which by their nature are not

monetary. The base indicator approach is easy to apply and can be used by all banks to create an operational risk reserve [26]. The higher the value of the indicator, the more reliable the bank, because it has sufficient funds to cover operational losses, one of the reasons for which is the process of money laundering or terrorist financing.

The results of calculating the reserve for operational risk on 01.07.2017 of the Ukrainian banks are presented in Table 3.1.

Table 3.1

Operational Risk Indicator of Ukrainian Banks
as of July 1, 2017, (thousand UAH)

№	Bank	Indicator	№	Bank	Indicator
1	2	3	4	5	6
1	JSC "Raiffeisen Bank Aval"	967 806,41	47	PJSC "UNISON BANK"	14 879,61
2	JSC "OTP BANK"	384 369,10	48	PJSC "KOMINVESTBANK"	13 829,72
3	JSC "PROKREDIT BANK"	94 588,97	49	PJSC "KB "GLOBUS"	13 812,99
4	PJSC "CITIBANK"	192 857,04	50	"FIRST INVESTMENT BANK"	13 192,28
5	JSC "UkrSibbank"	527 894,43	51	PJSC "BANK GRANT"	13 163,30
6	PJSC "ING Bank Ukraine"	143 743,89	52	PJSC "UNEKS BANK"	11 728,69
7	PJSC "Credit Agricole Bank"	343 146,51	53	PJSC "EUROPROMBANK"	11 472,53
8	PJSC "KREDOBANK"	121 580,56	54	PJSC JSCB "Lviv"	10 710,04
9	AB "UKRGAZBANK"	164 122,32	55	PJSC "RADABANK"	9 396,60
10	PJSC "BANK VOSTOK"	54 921,85	56	JSC "MetaBank"	9 043,60
11	PJSC "VES Bank"	38 608,77	57	PJSC "KREDITWEST BANK"	8 934,55
12	PJSC "Idea Bank"	75 051,87	58	JSC "BANK BOGUSLAV"	8 111,86
13	JSC "OSCHADBANK"	1 154 173,34	59	PJSC "ASVIO BANK"	7 874,04
14	JSC "PIRAEUS BANK ICB"	22 018,09	60	PJSC "CRYSTALBANK"	7 574,00
15	PJSCCB "PRAVEX-BANK"	53 249,94	61	PFB PJSC, Kremenchuk	7 533,85
16	JSC "Ukreximbank"	635 473,99	62	PJSC "AKB CONKORD"	7 129,54
17	PJSC "A-BANK"	88 075,36	63	PJSC "MOTOR-BANK"	6 962,16
18	PJSC "ALPHA-BANK"	364 509,70	64	PJSC "APEKS-BANK"	6 955,94
19	PJSC AKB "ARKADA"	52 512,44	65	PJSC "BANK SICH"	6 680,42
20	AB "Pivdennyi"	111 254,84	66	PJSC "SKY BANK"	6 404,29
21	PJSC "BTA Bank"	8 874,98	67	PJSC "VERNUM BANK"	6 328,89
22	JSCB "INDUSTRIALBANK"	26 309,02	68	PJSC "BANK AVANGARD"	6 319,01
23	PJSC "MARFIN BANK"	26 275,28	69	PJSC "AYBOKS BANK"	6 084,29
24	PJSC "MIB"	28 937,46	70	PAO "KB "AKORDBANK"	5 990,41
25	PU "PUMB"	466 447,07	71	PJSC "BANK "UKRAINIAN CAPITAL"	5 656,69
26	PJSC "UKRSOTSBANK"	241 697,63	72	PJSC "CALCULATION CENTER"	5 105,39
27	PJSC "UNIVERSAL BANK"	42 716,35	73	JSC "Ukrbudinvestbank"	4 916,33
28	Bank of Investments and Savings	27 004,06	74	PJSC "OKSI BANK"	4 707,23

1	2	3	4	5	6
29	PJSC "Credit Dnepr Bank"	–	75	JSC "CIB"	4 456,48
30	JSC "City Bank"	21 712,83	76	PJSC CB "Center"	4 435,10
31	PJSC CB "PRIVATBANK"	1 726 561,56	77	PJSC "BANK ALLIANCE"	4 343,40
32	PJSC "SBERBANK"	578 489,98	78	Polycombank	4 340,40
33	AB "CLIER HOUSE"	30 732,17	79	PJSC "BANK PORTAL"	4 116,88
34	PJSC "MEGABANK", Kharkiv	48 970,51	80	PJSC "AP BANK"	3 739,23
35	PJSC "Prominvestbank"	331 911,63	81	PJSC "KB "FINANCIAL PARTNER"	2 783,19
36	JSC "TASKOMBANK"	38 094,89	82	PJSC "JSCB "Trust-Capital"	2 353,59
37	PJSC "VTB BANK"	48 631,89	83	PJSC "CB "Land Capital"	2 129,09
38	PJSC CB "FINANCIAL INITIATIVE"	243 882,07	84	PJSC "Credit Optima Bank"	2 040,40
39	PJSC "BANK FORWARD"	76 832,70	85	PJSC "ALPARI BANK"	1 977,05
40	AB "EXPRESS-BANK"	38 416,07	86	JSC "ALBBANK"	1 898,05
41	PJSC "Deutsche Bank DBU"	22 942,29	87	PJSC "KB "GEFEST"	1 393,32
42	PJSC "DAVI BANK"	21 855,06	88	PJSC "Family Bank"	1 369,29
43	PJSC "BANK 3/4"	21 256,13	89	PJSC "RVS BANK"	1 359,72
44	PJSC "Poltava-Bank"	19 843,40	90	Ukrainian Bank of Reconstruction and Development	737,24
45	PJSC "CREDIT EUROPE BANK"	19 417,47	91	JSC "BM BANK"	–
46	PJSC "SEB CORPORATE BANK"	17 418,15	92	JSC "RODOVID BANK"	–

Source: built by the authors

As it can be seen from the table, the largest reserve for gross income can be formed by state-owned "Privatbank" and "Oschadbank". Also, "Raiffeisen Bank Aval" is among the top three.

One of the indicators that can help identify the risk of money laundering is the reputation of banks, which reflects the level of their reliability. For the first time, the fact that engagement in illegal financial transactions can lead to loss of business reputation was formulated in a document of the Basel Committee on Banking Supervision "Customer due diligence for banks" [27]. This document states that banks are particularly vulnerable to reputational risk, as they can easily be both an instrument for the commission of an illegal financial transaction and a victim of such a transaction. Accordingly, the disclosure of information about the involvement of a credit institution in the money laundering process or information about the lack of efficiency of the internal control system can lead to a loss of confidence in the credibility of the credit institution – in this and the relationship between the risk of money laundering and reputational risk.

For the purposes of the study, authors used the bank reliability rating, published by Mind portal on the results of the third quarter of 2017 [28]. The following factors that determine the reliability of banks, such as: capital adequacy, quality of

the loan portfolio, bank profitability, liquidity, support and ownership risks, uninterrupted payments and system value of the bank were taken into account when constructing the rating. By analysing the historical importance of each factor, as well as by examining banking experts, the level of each factors importance is determined by assigning weight factors that are equal to one. Such a technique adequately reflects the reliability of financial institutions in the conditions of economic turbulence [28]. The level of reliability was assigned to banks by the value of the final assessment: 5 – high, 4 – stable, 3 – satisfactory, 2 – low, 1 – catastrophic.

The results of the ranking of Ukrainian banks by the level of reliability are presented in Table 3.2.

Table 3.2

Rating of the reliability of Ukrainian banks

№	Bank	Rating	№	Bank	Rating	№	Bank	Rating
1	JSC "Raiffeisen Bank Aval"	5,0	14	JSC "PIRAEUS BANK ICB"	3,5	27	PJSC "UNIVERSAL BANK"	3,0
2	JSC "OTP BANK"	4,5	15	PJSCCB "PRAVEX-BANK"	3,5	28	BANK OF INVESTMENTS AND SAVINGS	2,5
3	JSC "PROCREDIT BANK"	4,5	16	JSC "Ukreximbank"	3,5	29	PJSC "BANK CREDIT DNEPRO"	2,5
4	PJSC "CITIBANK"	4,5	17	PJSC "A-BANK"	3,0	30	JSC "City Bank"	2,5
5	JSC "UkrSibbank"	4,5	18	PJSC "ALPHA-BANK"	3,0	31	PJSC CB "PRIVATBANK"	2,5
6	PJSC "ING Bank Ukraine"	4,0	19	PJSC AKB "ARKADA"	3,0	32	PJSC "SBERBANK"	2,5
7	PJSC "CREDIT AGRICOLE BANK"	4,0	20	Joint-Stock Bank Pivdennyi	3,0	33	AB "CLIER HOUSE"	2,0
8	PJSC "KREDOBANK"	4,0	21	PJSC "BTA Bank"	3,0	34	PJSC "MEGABANK", Kharkiv	2,0
9	AB "UKRGAZBANK"	4,0	22	JSCB "INDUSTRIALBANK"	3,0	35	PJSC "Prominvestbank"	2,0
10	PJSC "BANK VOSTOK"	3,5	23	PJSC "MARFIN BANK"	3,0	36	JSC "TASKOMBANK"	2,0
11	PJSC "VES Bank"	3,5	24	PJSC "MIB"	3,0	37	PJSC "VTB BANK"	1,5
12	PJSC "Idea Bank"	3,5	25	PU "PUMB"	3,0	38	Other banks	0,0
13	JSC "OSCHADBANK"	3,5	26	PJSC "UKRSOTSBANK"	3,0	-	-	-

Source: built on the base of [28]

Not all banks were included in this rating due to their low level of reliability. That is why for further calculations they are conditionally assigned a reliability rating "0". On the basis of the indicated indicators related to the risk of money laundering, a clustering of Ukrainian banks in the STATGRAPHICS Centurion environment was conducted, the results of which are presented in Table 3.3.

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Table 3.3

**Distribution of Ukrainian banks by the level
of money laundering risk as of 01.07.2017**

Cluster 1 (banks with high level of money laundering risk)	Cluster 2 (banks with middle level of money laundering risk)
PJSC "VTB BANK", PJSC CB "FINANCIAL INITIATIVE", PJSC "BANK FORWARD", JSC "EXPRESS-BANK", "Deutsche Bank DBU", PJSC "DIVI BANK", PJSC "BANK 3/4", PJSC "Poltava- Bank", PJSC "CREDIT EUROPE BANK", PJSC "SEB CORPORATE BANK", PJSC "BANK "UNISON", PJSC "KOMINVESTBANK", PJSC "CB GLOBUS", FIRST INVESTMENT BANK, PJSC "BANK "GRANT", PJSC "UNNEX BANK" PJSC "EUROPROMBANK", PJSC "JSCB "Lviv", PJSC "AB "RADABANK", METABANK JSC, CREDITWEST BANK PJSC, BANK BOGUSLAV JSC, ASBIO BANK PJSC, CRYSTALBANK PJSC, PJSC PFB, PJSC "AKB CONCORD", PJSC MOTOR-BANK, PJSC "APEKS-BANK", PJSC "BANK SICH", PJSC "SKY BANK", PJSC "VERNUM BANK", PJSC "BANK AVANGARD", PJSC "AYBOKS BANK", PJSC "CB "ACORDBANK", PJSC "BANK "UKRAINIAN CAPITAL", PJSC "ZORRAKHUNKOVYV CENTER", JSC "UKRBUDINVESTBANK", PJSC "OKSY BANK", JSC "CIB", PJSC CB "Center", PJSC "BANK ALLIANCE", Polikombank, PJSC "BANK PORTAL", PJSC "AP BANK", PJSC "KB "FINANCIAL PARTNER", JSC "JSCB "Trust-Capital", PJSC "CREDIT OPTIMA BANK", PJSC "ALPARI BANK", ALBBANK PJSC, PJSC "KB "GEFEST", PJSC "BANK FAMILNYI", PJSC "RVS BANK", Ukrainian Bank for Reconstruction and Development, JSC "BM BANK", JSC "RODOVID BANK"	JSC "OTP Bank", JSC "PROCREDIT BANK", PJSC "SITIBANK", JSC "UkrSibbank", PJSC "ING Bank Ukraine" PJSC "CREDIT AGRICOLE BANK", PJSC "KREDOBANK", AB "UKRGAZBANK", PJSC "BANK VOSTOK", PJSC "VES Bank", PJSC "Idea Bank", JSC "PIRAEUS BANK ICB", PJSCCB "PRAVEX-BANK", Ukreximbank JSC, PJSC "A-BANK", PJSC "ALPHA-BANK", PJSC AKB "ARKADA", Joint-Stock Bank Pivdennyi, PJSC "BTA Bank", JSCB "INDUSTRIALBANK", PJSC "MARFIN BANK", PJSC "IIB", PAT "PUMB", PJSC "UKRSOTSBANK", PJSC "UNIVERSAL BANK", BANK INVEST, PJSC "BANK CREDIT DNEPRO", Mine Bank, PJSC "SBERBANK", JSB "CLIERING HOUSE", PJSC "MEGABANK", PJSC "Prominvestbank", JSC "TASKOMBANK"
	Cluster 3 (banks with low level of money laundering risk)
	JSC "Raiffeisen Bank Aval", JSC "Oschadbank", PJSC CB "PRIVATBANK"

Source: built by the authors

The first cluster includes 56 Ukrainian banks, which are characterized by a low level of reliability and a high level of operational risk. There is a high probability that these banks may be used or have already been used for the process of legalization of proceeds from crime, which adversely affected their reliability, reputation and ability to form reserves for operational risk.

The second cluster included 33 Ukrainian banks, for which reliability and operational risk ratios are average, thus, the level of money laundering risk is also average. The banks of this cluster are dominated by banks of foreign banking groups.

Three banks with a low risk of money laundering are distributed to the third low-risk cluster: Raiffeisen Bank Aval, Privatbank, and Oschadbank. Such results are quite logical since two of the three banks have state ownership and are subject to increased state control.

Determining the level of money laundering risk based on information-accessible criteria: the reserve for operational risk and reliability of the bank will contribute to the formation of effective tools for preventing and minimizing risks.

Conclusions

This research is aimed at developing analytical tools for identifying the level of risk using banks for the legalization of criminal incomes based on data from public financial reporting. It is established that there is a tendency to increase the number of cases of the legalization of proceeds from crime in Ukraine. The riskiest transactions in terms of legalization of criminal assets are cash transactions and operations related to receiving or providing financial assistance.

The ability to withstand the risk of money laundering is largely determined by the reliability of banks, which in turn depends on the volume and structure of equity capital. The analysis of the dynamics and structure of the equity capital of Ukrainian banks during 2016–2017 showed that, despite the liquidation processes and significant losses, the inflow of capital structure to the banking system continues.

Based on the distribution of Ukrainian banks by the level of reliability, it was revealed that by the year 2017, 10% of banks had a high level of reliability and, to a lesser extent, were at risk of money laundering; 64% of banks had an average level of reliability; 26% of banks were exposed to significant risk of money laundering.

It is established that the risk of criminal incomes legalization is closely related to the operational risk of banks. According to the results of clusterization of all functioning banks of Ukraine, three groups of banks were identified by the operational risk and reliability rating criteria – with a low, medium, and high risk of the legalization of proceeds from crime. It is established that the vast majority of Ukrainian banks have a high level of money laundering risk.

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