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Banking department

(department)

FINAL QUALIFYING PAPER (PROJECT)

on the topic:

Financial monitoring of banks on a risk-oriented approach

(topic)

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CONTENT

INTRODUCTION

Relevance of the research. The global financial crisis has raised questions concerning the performance of financial supervisors, in particular, were all the necessary steps to prevent the crisis undertaken by state regulators or could financial supervisors have done more. It should be noted that measuring the effects of supervision must become an integral part of the supervisory process. This will not only promote external accountability, but also – and equally important – it will show whether supervisory actions have contributed to the desired results. This information is important in order to improve the supervisory process and to ensure that the correct priorities are set.

The banking system is an important link for a market economy. Banks as intermediaries distribute financial resources between economic entities. The architecture and activities of banks in this market are directly related to the high probability of risk occurrence. The analysis and assessment of the level of riskiness in the banking system is the basis of banking risk management and supervision in all countries. This process is of paramount importance for Ukraine due to the banking crisis in 2014-2017 resulting of GDP reduction of about 40% and halving the number of banks (from 180 institutions in 2014 to 77 units in 2019). Despite the "clearing" of the market and reducing the impact of crisis factors, there is still a tendency to increase the volume and proportion of troubled assets. The presence of a large share of problem loans on the balance sheets of domestic banks makes it impossible to resume lending to the economy and acts as a defeat factor for the entire banking sector in the deployment of crisis processes. In addition, the slow introduction of currency risk hedging instruments, such as forwards and swaps, slows down the development of open foreign exchange markets because of the uncertainty of the participants, namely exporters and importers in the future exchange rate. Therefore, the issue of the need for analysis, qualitative and quantitative assessment of the size of the banking sector risks occurs because of the direct correlation between the state of the banking industry and country economic growth.

The need for risk assessment and their inclusion in the activities of banks is growing with the development of economic relations. A lot of domestic and foreign scientists and practitioners are working on this issue, in particular: Kick T., Pfingsten A., O.V. Dzyublyuk, Vasyurenko O.V., Primostka L.O., Blank I.A., Vitlinskyi V.V., Kireev A.I., Poletaev A.S, Dubkov S. However, at the present time, a risk assessment is required as for a particular bank and as for the system as a whole. It is also necessary to develop methods for assessing the levels of systemic risk. The foreign theoretical basis and the practical application of the approaches to minimizing the level of risk of the industry have high achievements. Therefore, the use of foreign experience should be the key to create a domestic risk management model.

It became clear that supervising financial markets and institutions has become increasingly complicated over the past decades. This is firstly caused by the increased complexity of financial markets, firms and products. Financial institutions have become more globally active and their business has become ever more intricate as trade-in highly complex products has expanded and complexity to attract clients has increased significantly. Secondly, financial markets are highly dynamic, as financial market participants respond quickly to changed circumstances, such as innovations in information and communication technologies, new financial market regulation and changing business models. Regulation and supervision often lag behind developments and innovations at markets and supervised institutions.

Purpose of the paper (project): Research of theoretical foundations and the current state of the bank supervision as the act of monitoring the financial performance and operations of banks in order to ensure that they are operating safely and soundly and following rules and regulations.

To achieve this, the **following tasks** were formulated:

- to review risk-based financial supervision theoretical basis;
- to research practical aspects of financial supervision in banks based on Risk-based supervision (RBA);
- to analyse riskiness level of Ukrainian banking system;

- to provide diagnostic of the current banking supervision system;
- to make recommendations on development of financial supervision in the banking system based on risk-oriented approach;
- to analyse of international financial supervision risk-based practices and standards;
- to generate an algorithm for conducting financial supervision in banks based RBA.

The object of the research are elements of financial supervision in particular the bank supervision.

The subject of the research are organizational, informational and methodological measures of financial supervision based on risk-oriented approach.

Research methods. The theoretical and methodological basis of the research is the scientific works, the Basel Committee's recommendations and the NBU's regulatory documents on financial supervision based on a risk-oriented approach. The research is based on general scientific and special methods of cognition: abstract-logical – for the analysis of professional literature, theoretical generalization and formation of conclusions about the essence of approaches to financial supervision and features of application of risk-oriented approach; decomposition – for revealing the purpose of research and setting tasks; methods of analysis and synthesis – for studying the level of riskiness of the banking system; sensitivity analysis – for enhanced understanding of the relationship between the raw data and reduction of uncertainty; correlation-regression analysis – for establishing the relationship between indicators and risk prediction.

The information base of the research is legislative and regulatory domestic and foreign acts on financial supervision on the basis of risk-oriented approach; official data of the National Bank of Ukraine; analytical reviews of the European Central Bank; Basel Committee recommendations, financial statements of banks; monographic research and scientific publications on the problem under study.

The scientific novelty of the obtained results is the following:

- for the first time, the scientific hypothesis was formulated regarding the possibility of profiting financial supervision, groping key indicators of the bank's and its clients' activities and modeling them under stress scenarios;

- further developed: systematization of types of financial supervision indicators based on risk-oriented approach, according to which it was proposed to distinguish Basel Committee recommendations, recommendations of the National Bank of Ukraine, influence of macro and microeconomic situation on the Bank's performance indicators;

- improved: comprehensive analysis of the level of riskiness of the banking system of Ukraine.

The practical significance of the results obtained. The results obtained can be used by the National Bank of Ukraine in compiling stress testing models, assessing risks both in banks and in the system as a whole; drafting of legal acts on financial supervision of banks. Practical guidance on the formats for presenting quantitative and qualitative information on approaches to financial supervision can be helpful to governmenters in choosing the best approach for doing business in Ukraine.

Master's personal contribution. Graduation qualification is a self-completed study by the author.

Publications. Some results of the study are reflected in:

- a scientific article: Marchenko M. Riskiness Level Analysis of Ukrainian Banking // Management of financial institutions: changing stereotypes: Coll. Sciences. Art. stud. full-time study / resp. ed. N.P. Shulga. - K.: Kyiv. nat. Univ of tr. and econom., 2019. - Part 2 - 296 p. (P.215 - 220);

- report “Riskiness Level Analysis of Ukrainian Banking” at the scientific-practical conference on "Financial and credit systems: problems of theory and practice", March 20, 2019, which was awarded first place;

- scientific work "Selling non-performing loans portfolio as a tool for reducing the credit risk of Ukrainian banks" at the 6th International Student Research Contest "Credit-Banking System: History, Present and Prospects for Development", June 6, 2019, which was awarded first place.

Scope and structure of work. The work consists of introduction, three parts, conclusions, references and appendixes. The volume of work is 76 pages. The paper presents 7 tables, 21 figures, 7 appendices and was drawn upon 66 scientific sources.

PART 1.
RISK-BASED FINANCIAL MONITORING THEORETICAL BASIS

Financial supervision in the banking sector is widely understood as a system used by the government to guarantee the financial stability of the country. In order to be effective, financial and banking supervision must set out clear objectives that are understandable to all policy makers and those who directly control banks. In such usage, regulation is the practice of ensuring that institutions comply with existing laws and the regulatory interpretations of those laws that comprise regulatory rules.

The monitoring system is used to monitor a number of parameters and values for the operation of the entire system, as well as the operational state of the bank. In this case, the state of the monitored system can only check. The software may not be used to change or set any of the values.

The monitoring system is most advantageous when it is connected to the alarm system. In this case, the values are compared with a series of set standard or ideal values, or against the range of values in which the controlled parameters should be. If the read values do not match the specified parameters, the alarm indicates an error, which allows the user to take steps to restore optimal operating conditions. An element of financial monitoring is financial supervision. Both are synonyms for the act of overseeing the execution of a task or activity. Some speakers use them interchangeably, but they do differ in connotation. Supervise implies more interaction than monitor. Supervisors have the responsibility of informing and directing, while monitors observe without instructing. So we decided to explore it in more detail.

In narrow meaning, supervision is the ‘on-site examination’ and ‘off-site monitoring’ of regulated institutions and extends beyond simply checking to see if rules are strictly followed (off-site monitoring to ensure a required form is filed or financial ratio information). The supervision and regulation are seemed by related (and most times overlapping) entities – that is, supervisors are usually also regulators (but

not the other way around). The main reason for such overlap is the intention of these two activities to complement one another. One can, therefore, think of the supervisory review as providing balance to the regulatory process as regulatory 'rules' balance supervisor [1].

There are different approaches to the classification of financial supervision. The Group of Thirty defines its own financial supervision approaches classification based on functionality (Table 1.1).

Table 1.1

Financial supervision approaches by the Group of Thirty

Approach	Definition
Institutional Approach	The Institutional Approach is one in which a firm's legal status (for example, a bank, broker-dealer, or insurance company) determines which regulator is tasked with overseeing its activity from both a safety and soundness and a business conduct perspective.
Functional Approach	The Functional Approach is one in which supervisory oversight is determined by the business that is being transacted by the entity, without regard to its legal status. Each type of business may have its own functional regulator
Integrated Approach	The Integrated Approach is one in which a single universal regulator conducts both safety and soundness oversight and conduct-of-business regulation for all the sectors of financial services business
Twin Peaks Approach	The Twin Peaks approach, a form of regulation by objective, is one in which there is a separation of regulatory functions between two regulators: one that performs the safety and soundness supervision function and the other that focuses on conduct-of-business regulation.

Source-based authoring [3,4,5,6,7]

The Institutional Approach is one of the classical forms of financial regulatory oversight. It is a legal-entity-driven approach. The firm's legal status (for example, an entity registered as a bank, a broker-dealer, or an insurance company) essentially determines which regulator is tasked with overseeing its activity both from a safety and soundness and a business conduct perspective. This legal status also determines the scope of the entity's permissible business activities, although generally there has been a tendency for the regulators to reinterpret and expand the scope of permissible

activities, and therefore the scope of activities under their jurisdiction, when requested to do so by the firms. Thus, over time, entities with different legal status have been permitted to engage in the same or comparable activity and be subject to disparate regulation by different regulators (Fig 1.1).

According to the Functional Approach supervisory oversight is determined by the business that is being transacted by the entity without regard to its legal status. Each type of business may have its own functional regulator. For example, under a "pure" Functional Approach, if a single entity were engaged in multiple businesses that included banking, securities, and insurance activities, each of those distinct lines of business would be overseen by a separate, "functional" regulator. The functional regulator would be responsible for both safety and soundness oversight of the entity and business conduct regulation. The challenge for the Functional Approach is that activities must fall into categories clear enough for the regulator to oversee (Fig 1.1).

The Integrated Approach iplies, that a single universal regulator conducts both safety and soundness oversight and conduct-of-business regulation for all the sectors of the financial services business. This model has gained increased popularity over the past decade. It is sometimes referred to as the "FSA model" because the most visible and complete manifestation is the Financial Services Authority (FSA). The most important reasons for which countries adopted the integrated model are: the need for better supervision of the financial system which is moving towards universal banking (93% of respondents), maximization of economies of scale and scope (80%), the need for solving problems which result with bad communication and lack of cooperation between current supervisory agencies (27%), minimization of gaps in regulation and supervision of financial intermediaries (20%) [2] (Fig 1.1).

The Twin Peaks Approach is based on the principle of regulation by objective and refers to a separation of regulatory functions between two regulators: one that performs the safety and soundness supervision function and the other that focuses on conduct-of- business regulation. Under this approach, there is also generally a split between wholesale and retail activity and oversight of retail activity by the conductof-business regulator. This is also viewed by some as supervision by objective. The two

jurisdictions that use the Twin Peaks Approach are Australia and the Netherlands. A number of other jurisdictions are engaged in debates over adopting this type of approach (Fig 1.1).

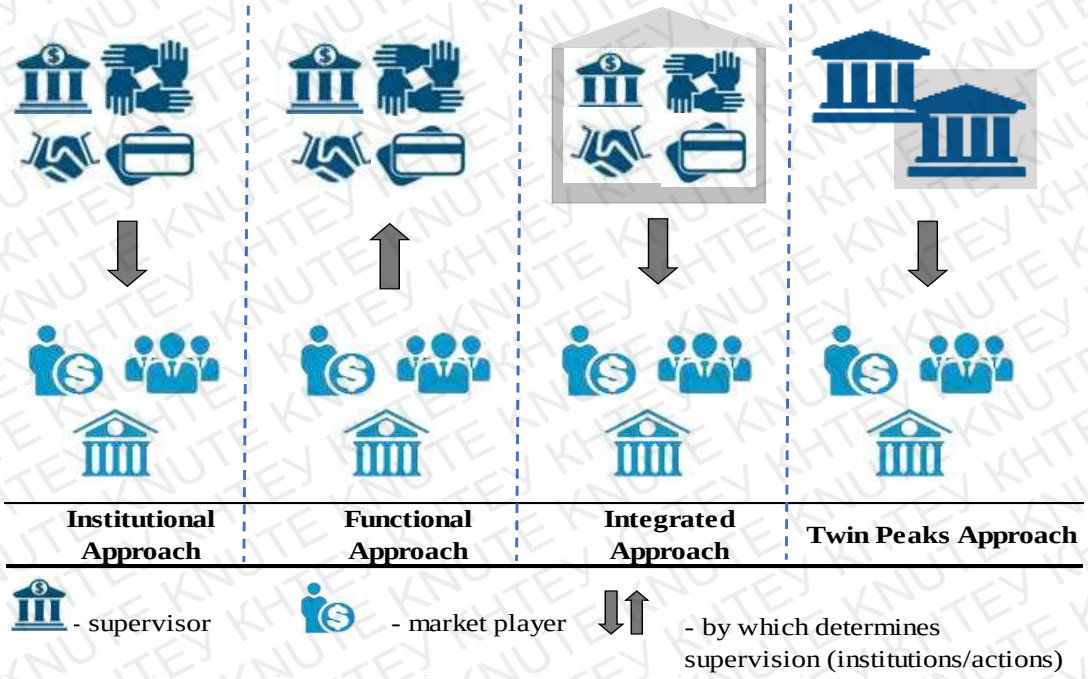


Figure 1.1 Approaches of financial supervision

Source: author's elaboration based on [3,4,5,6,7]

Risk-Based Supervision is defined as the adoption of supervisory mechanisms on financial institutions and development of internal controls that seek to prevent the occurrence of risk as opposed to the reconstruction after the occurrence of risk [8]. Risk-Based Supervision demonstrates the benefits of moving away from an approach based on strict compliance, specific rules, and quantitative controls towards an approach that puts more emphasis on the identification and management of relevant risks. For a long time, regulators within the financial sector have used a rule-based system and more or less relied on financial analysis using ratios as a tool of supervision. Subsequently, it has been realized that relying on financial ratios alone may not be an effective tool for preventing the financial crisis in the financial and banking industry. This has led to the emergence of the risk-based approach to supervision which is aimed at promoting transparency, providing early warning signals

and encouraging the regulated entities to self-evaluate their position at regular intervals [9].

The movement towards risk-based supervisory approaches can be traced to the development of early warning systems for banks. The earliest of these systems was the CAMEL system for risk rating adopted by the United States in the 1980s. In 1988 the Basel Committee on Banking Supervision implemented the Capital Adequacy Accord (Basel I) which provided a risk-based framework for assessing the capital adequacy of banks to cover credit risks. The development of this framework was an important step in the path towards risk-based supervision. It sought to ensure an adequate level of capital in the banking system by applying weighting to credit exposures based on broad risk classifications [10].

In 1999 the Basel Committee began the process of replacing the Basel I Accord with a more contemporary guideline. The new framework known as Basel II [11] is designed to encourage good risk management by tying regulatory capital requirements to the results of internal systems and processes. In this regard, the framework added two pillars to the model. The second pillar, the supervisory review process which allows supervisors to evaluate a banks' assessment of its own risks and assure themselves that the banks processes are robust and the third pillar, the market discipline which ensures that the market is provided with sufficient information to allow it to undertake its own assessment of banks' risks. It is intended to strengthen incentives for improved risk management through greater transparency (Basel Committee on Banking Supervision, 1999, [10])

Risk-Based Supervisory Process RBS is an on-going supervision process whereby risks of an institution are assessed and an appropriate supervisory plan designed and executed in an efficient manner. The risk assessment and supervisory process highlights both the strengths and vulnerabilities of an institution and provides a foundation from which to determine the level and extent of supervisory attention. The risk-based supervisory framework also involves identifying significant operations or

processes, risk identification and assessment of risk management, controls, mitigation plans, net risk and overall assessment [12]. Toolkit for RBS, the risk-based supervisory process begins with monitoring which involves regular collection and analysis of specific information to enable routine checks to be undertaken and assess the risk profile to be able to plan for its supervisory approach. Once sufficient information has been gathered to assess, a range of analysis which may cover legal compliance, financial strength, risk management market conduct, governance, disclosure, operations, and performance may be carried out to identify the level of risk posed. Risk scoring systems, using consistently applied quantitative and qualitative factors will be used, assessing risk in the context of the magnitude of potential impact as well as the probability of occurrence. An overall risk score for the institution will be determined and depending on the outcome of the score this may trigger a furthermore in-depth investigation directing further supervisory action. The institutional profile should be updated continuously to keep track of significant developments that occur as the updating of the risk management plan is a dynamic process requiring frequent assessments at various stages of the supervisory process [13].

Risk-based supervision is a continuous process and comprises risks assessment, determination of a supervisory strategy according to the risks assessed and implementation of supervisory actions in order to mitigate risks. So exist some components of the risk-based supervision framework (Figure 1.2)

Input 	• Regular onsite examinations; • Onoing offsite surveillance; • Incidents reported by the supervisedinstitutions; • Market signals
Risk assessment 	• Financial position (solvency, liquidity and profitability); • Governance; • Risk management; • Complience
Result 	• Allocation of resources to institutions and areas with the highest rik

Figure 1.2 Key components of the bank risk-based supervision framework

Designed on the basis [14,15,16, 17,18,19,20,21, 22, 23]

Risk-Based Supervision (RBS) is gradually becoming the dominant approach to regulatory supervision of financial institutions around the world. It is a comprehensive, formally structured system that assesses risks within the financial system, giving priority to the resolution of those risks. RBS is often contrasted with rules-based regulation. The latter, also known as principles or compliance-based supervision, is a method of regulation which involves checking for and enforcing compliance with rules – legislation, regulations or policies – that apply to an entity. RBS has a regulatory emphasis of «ocusing on what matters» – assessing the degree of risk in the company's business operations and determining how to reduce the risk as required.

With RBS, entities are always being monitored, both for compliance with the rules and for how they approach risk management. Failure to comply or to manage well is noted, and action is taken according to the appropriate legislation, to deal with any concerns. In a RBS regulatory system the following are considered:

- finding contraventions of the law, regardless of materiality;
- reconciliation of data, counting the securities, another detailed checking;
- business strategy: financial analysis, on-site Inspections, market research;
- management style, attitude to risk, control environmentFour considerations of RBS. [65]

A prerequisite for good RBS is knowledge of the institution, its industry and operating environment. These can all be observed by creating a risk profile of an institution:

- institution’s activities
- risks in those activities
- quality of risk management (day-to-day management and Oversight)
- capital required to support operations
- identifying the key risks within an institution that may affect its risk profile
- that its supervisory activity and resources applied are commensurate with the level of risk;

• off-site monitoring – reviewing the financial data filed by the institution, using ratios and other methods of analysis. [65]

In the risk rating process, there are two areas that should be evaluated – inherent risk and quality of risk management (risk mitigation). Institutions may have the same level of inherent risk (the types of businesses are almost identical), but one institution may have much better risk management processes than the other. This approach of first assessing inherent risk and then assessing the quality of risk management is now being generally accepted around the world.

There is a significant difference between regulation and supervision. It is connected with the type of information the two use of a bank – «hard» or «soft». Regulators can only use hard information such as a bank's business lines or the adequacy of its capital or liquidity. Supervisors, on the other hand, can also make use of softer information, like the quality and centrality of a bank's risk management. The distinction between soft and hard information is informed by results in Goldsmith-Pinkham [25]. They provide a 'look behind the curtain' using computational linguistics techniques to parse the content of thousands of supervisory messages, or actions, sent by supervisors to banks, and then examine how the frequency of topics varies with key characteristics of the bank holding companies (BHCs), such as size and risk. Using a number of methods, they find that supervisory actions are a combination of soft and hard information; and importantly, supervision involves much more than mere compliance with regulations.

The reliance on supervision on soft information means that judgement must often inform supervisors' decisions. This element is captured by allowing for false negatives and false positives in supervisors' information, meaning that supervisors can observe a good signal although a bank is in trouble or a bad signal although a bank is fine. As highlighted by the timeline below (Fig 1.3), once the hard regulations are set, a bank chooses a low-risk or high-risk action – for example, whether or not to engage in diligent risk management – and then later the risk is realised in an outcome, such as

loan repayments or defaults. While regulations are set at the beginning, supervisors are active throughout, first monitoring to produce information (a signal) about the bank's action, then intervening based on the signal. In our setting, the supervisor's monitoring improves the reliability of the signal that supervisors act on, and curbs banks' incentives to take excessive risk in the first place. The level of monitoring is optimally chosen taking both of those effects into account. Intervention can be flexibly chosen after the signal is observed. This flexibility is a big benefit of supervision compared with regulation since it allows for optimal response to the particular situation. [25-32]

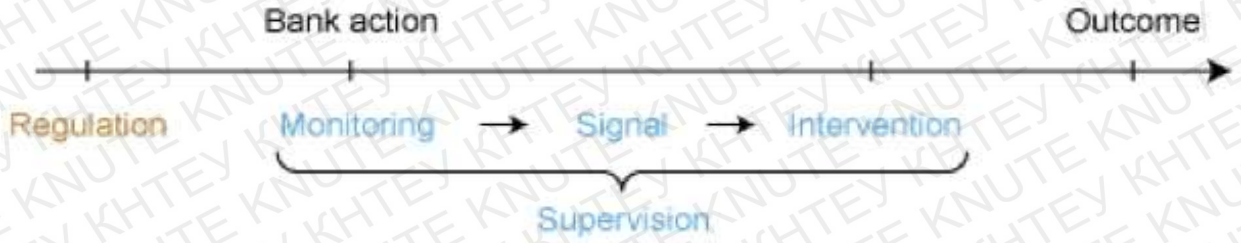


Figure 1.3 The difference in timeline between regulation and supervision [31]

The effectiveness of supervision largely depends on the institutional conditions in which the supervisor operates. A requirement for effective supervision is that other forms of internal and external supervision function properly. Examples of internal supervision are the involvement of the board, including both executive and non-executive directors, and internal control departments, such as the audit, risk management and compliance departments.

Also, external accountants and rating agencies play an important role as they monitor the external reporting by financial institutions, both quantitatively and also increasingly in a qualitative way. Supervisors face the challenge to find a proper balance between their own supervision and that of these internal and external parties. In a complex and dynamic environment, supervisors obviously will rely on the work and insights of all these parties and therefore depend on them. However, after the crisis, the functioning of these parts have been questioned and supervisors will therefore have to make up their mind to what extent they can still rely on them. If it

turns out that these parties' supervision is insufficient, it has to be strengthened. Another requirement for effective supervision is a legal framework offering high-quality supervisory instruments. The financial crisis made clear that – among other things – the supervisory instruments as currently provided by global, European or national regulations were not up to par in certain areas. As emphasised in the previous section, supervisory regulations often lag behind developments and innovations at supervised institutions, partly because developing regulations often is a time-consuming process, and partly because financial markets are very dynamic.

Another factor is that regulations are the outcome of negotiations in which both national interests and the interests of the sector are at play. Combined with pressure on the national supervisor to refrain from imposing additional requirements on top of (sometimes insufficient) international standards (so-called 'gold-plating'), this can restrict the supervisor's ability to respond quickly and effectively to risks. Three specific issues in this area deserve further attention. The first is how supervision based on open norms – an important characteristic of principle-based regulation – can be implemented effectively. The second is how supervisors can be outcome-focused without overstepping their supervisory mandate. The third is how supervisors can contribute to the quality of financial policies and supervisory regulations [33].

Banks are faced with a number of risks (Fig 1.4). Basel Committee as major supervisor, regulator and common standards developer in banking created own classification. It selected three main groups of risks as market, credit and operating in the basic regulatory document (Basel II and Basel III) for assessing and measuring the risks in banks [36]. The National Bank of Ukraine (NBU) allocates nine categories of bank risks for more detailed assessment and ease of analysis, such as credit risk, liquidity risk, interest rate risk, market risk, currency risk, operational and technological risk, reputational risk, legal risk, and strategic risk [37]. Global Association of Risk Professionals (GARP) also issue risk classification. They recognize market, credit and operational risks as Pillar I. Other financial risks they

include in another group called Pillar II. And non-financial risks they classify as the third group [38]. Therefore, to combine these approaches we take three main risks for the banking system research as core.

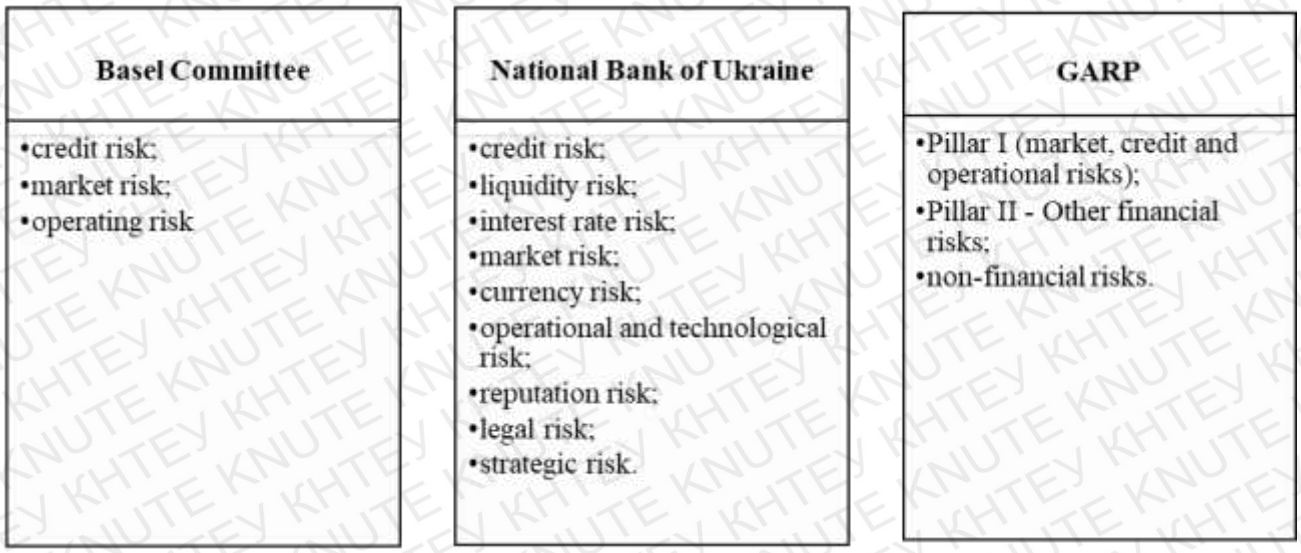


Figure 1.4 Approaches to bank risks classification [36-38]

All institutions are exposed, to a greater or lesser extent, to certain broad types of risk such as credit risk, market risk, operational risk, etc. These categories fall under "inherent risks" because they are inherent to being in business. For each of these categories there are ways to consistently and objectively assess the level of risk:

• Operational Risk – everyday risks of operating and managing a business. This includes the quality and reliability of an institution's IT system, as well as the competence of management;

• Market Risk – relates to the possible change in the value of market prices, e.g., an institution's portfolio of common stocks is subject to market risk because the market value may change very quickly;

• Credit Risk – the risk of not being paid by entities owing money to the institution, e.g., the institution may have loaned money to investors by buying their debentures and is yet to be repaid;

• Related Party Risk – when transactions occur between related parties, the normal discipline of market negotiation is not present; therefore, transactions between related parties such as shareholders and supervised institutions are subject to the risk that the interests of the institution will be subjugated to those of the shareholders;

• Liquidity Risk – The risk that the institution will require liquid funds but not be able to access such when required to meet an obligation that is due and payable, e.g., a short-term insurance company has invested most of its funds in real estate; it requires liquid funds to pay claims and would, therefore, have high liquidity risk;

• Underwriting Risk, Provisioning Risk – underwriting involves conducting research and assessing the degree of risk of each applicant or entity before assuming that risk. This check helps to set fair borrowing rates for loans. [65]

Consequently, under RBS there is a process of continuously updating risk assessments through onsite reviews, offsite reviews and market intelligence that creates an "early warning" or "rating" system for the supervisory authority to anticipate and deal with emerging issues. For example, the occurrence of a major risk event which an authority has become aware of through news channels would prompt it to revisit the risk ratings and capital positions of all institutions that underwrite the particular risk. The supervisory authority can observe readily how the risk profile of both individual institutions and the industry changes over time. These observations are useful from the perspectives of the authority looking at the adequacy of the legislation, alerting policymakers and in discussions with industry bodies. Compliance based approaches are more likely to benchmark on the basis of asset size, asset growth or capital strength. Benchmarking on the basis of risk is preferable from the perspective of the authority. There are advantages to RBS but also additional risks. RBS requires experienced and knowledgeable supervisors to exercise subjective judgments on a continuous basis. Compliance based approaches require supervisors to determine whether or not institutions comply with a requirement so is a "yes" or "no" type

decision whereas RBS requires supervisors to evaluate “how well or otherwise” an institution handles its business.

The specificity of risk-oriented (meaningful) supervision methods is that the primary focus of the supervisory authority is not on verifying compliance with formal regulatory requirements of a quantitative nature, but on verifying compliance with qualitative requirements with a focus on risk management mechanisms and methods. The supervisor assesses whether the bank's activities will be able to meet its requirements and also determines how the bank's internal policies for managing the bank's operations will ensure the bank's sustainability in the future. The most important element of a risk-oriented supervisory process is the establishment and continuous updating of a bank's risk profile - a general assessment of a bank's risk as a result of risk analysis of the groups of operations, products, services that make up the bank's core activities, as well as internal risk assessment and management systems. At the same time, such tools as analysis of the implementation of prudential standards, remote analysis of financial statements, and complex checks of bank operations on the ground are used to build and constantly monitor the risk profile of the bank. However, a key aspect of the risk-oriented approach is the assessment of banking risks and the quality control of banks' internal risk management systems. Thus, the risk-oriented supervisory process is a recurring cycle, the main stages of which are:

- preparation of a preliminary risk profile based on data from remote supervision, reports made on the results of past audits of the bank, other information about the bank's activity;
- identifying banks and critical areas of their operations that require first and foremost inspection attention;
- carrying out inspections of banks' activities with updating the risk profile following the results of such inspections;
- comparison of initial and final results of the audit, assessment of the direction of change of risks and quality of internal risk management systems of the bank;

• preparation and implementation of a supervisory plan for the medium term, including supervisory response measures and methods of interaction with the bank's management;

• remote analysis of the bank's financial position and risk level.

The key benefits of a risk based supervision framework for both supervisory agencies and financial institutions include but are not limited to:

1) Directing resources more efficiently by compiling and assimilating relevant risk information that helps prioritize examination schedules, which in time should result in examination teams spending less time on site at individual financial institutions;

2) A consistent framework for evaluating financial institutions through the separate assessment of inherent risks and risk management processes;

3) Early identification of emerging risks in individual financial institutions and on a sectoral basis before they become serious problems;

4) A better appreciation by supervisors of the characteristics of the financial institutions' business, the risks they face and the quality of their management;

5) Enhancing surveillance effort, in which the monitoring of new developments and strategic changes at a given financial institution are conducted throughout the examination cycle.

Risk-based supervision has become central to the better regulation agenda. A focus on outcomes, or on risks rather than rules, has clear resonance with the search for better regulation. Risk-Based Supervision methods are gaining acceptance as they offer the prospect of advantages relative to other approaches. They provide a forward-looking paradigm around which to provide supervision that offers the promise of reduced risk and potential efficiency gains. Risk-based methods will enable better allocation of scarce resources thus improving performance.

PART 2.
PRACTICAL ASPECTS OF FINANCIAL SUPERVISION IN BANKS BASED ON A RISK-ORIENTED APPROACH

2.1. Riskiness level analysis of Ukrainian banking system

The banking system is important because it links world economies mainly by transferring funds that are not needed at the moment to those in need. Banks as intermediaries help to distribute financial resources between legal entities and individuals. The architecture and activities of banks in this market are directly related to the high probability of risk occurrence. The analysis and assessment of the level of riskiness in the banking system is the basis of banking risk management and supervision in all countries. With the consequences of this abrupt failure, market participants are shrinking now.

Therefore, the issue of the need for analysis, qualitative and quantitative assessment of the size of the banking sector risks occurs because of the direct correlation between the state of the banking industry and country economic growth.

At the end of February 2019, the NBU identified five main risks for this period. They are a high level of non-performing assets, very short resources, high level of loan and deposit portfolios dollarization of banks, a high concentration of the state as an owner in the banking market, and insufficient understanding by the management of small banks of the need for a business model. Therefore, taking into account that the loan portfolio occupies more than half of the structure of bank assets and, according to the NBU estimates, firstly, we decided to reveal the credit risk in the banking industry in more detail (Figure 2.1).

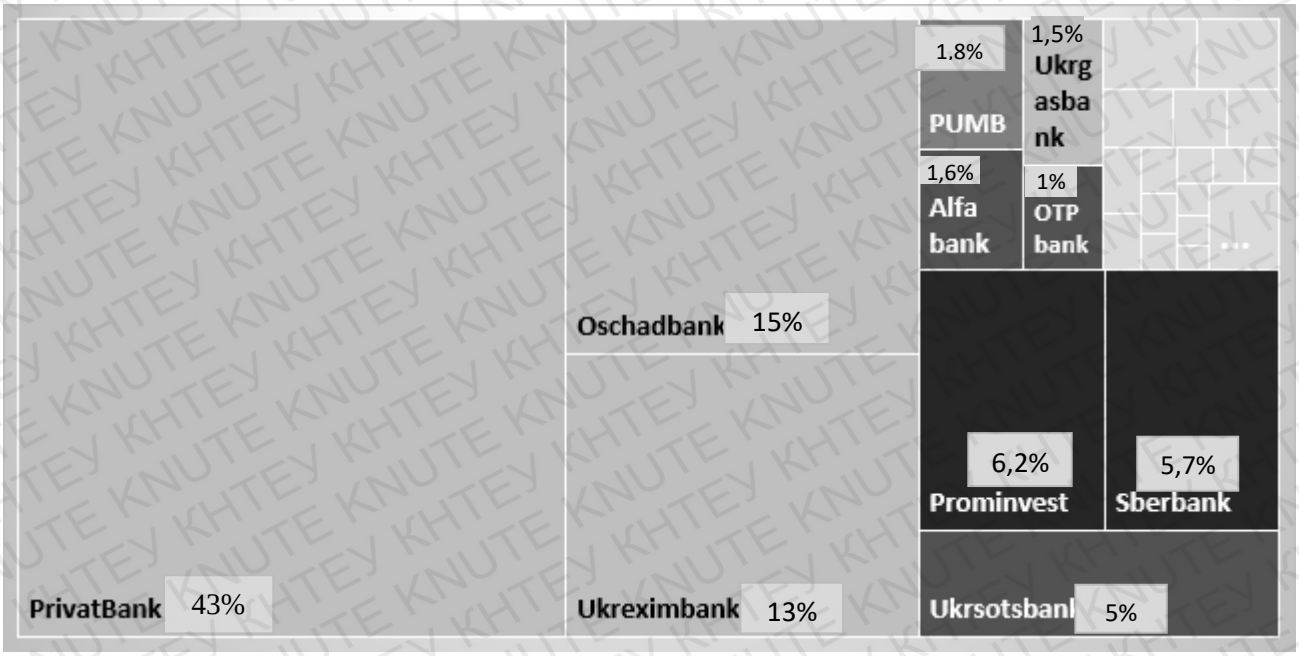


Figure 2.1 Credit risk in the banking industry, as for 01.01.2019

Source: created by the author using NBU sources [34]

It was analyzed and ranked 78 operating banks by assets with a credit risk for all 5 classes of individuals and 10 classes of legal entities in the total portfolio for FY2018. The analysis showed that all banks with a state capital have high credit risk. Moreover, the loan portfolio of PrivatBank consists of 43% risky assets, the return on which may not occur. Banks with Russian capital, ProminvestBank and SberBank take up almost the same share. In addition, if the assets of insolvent bank Financial Initiative Bank are added to the aggregate portfolio, its share of credit risk reach 3%, and it takes the seventh place among banks with high-risk assets.

Taken to the account that the loan portfolio occupies more than half of the structure of banking assets, according to the NBU estimates, and its dynamic of growth over the last 3 years is 0.4% as evidenced by CAGR (Compound Annual Growth Rate), it is important to make a more detailed analysis of the credit risk in the banking sector (Figure 2.2).

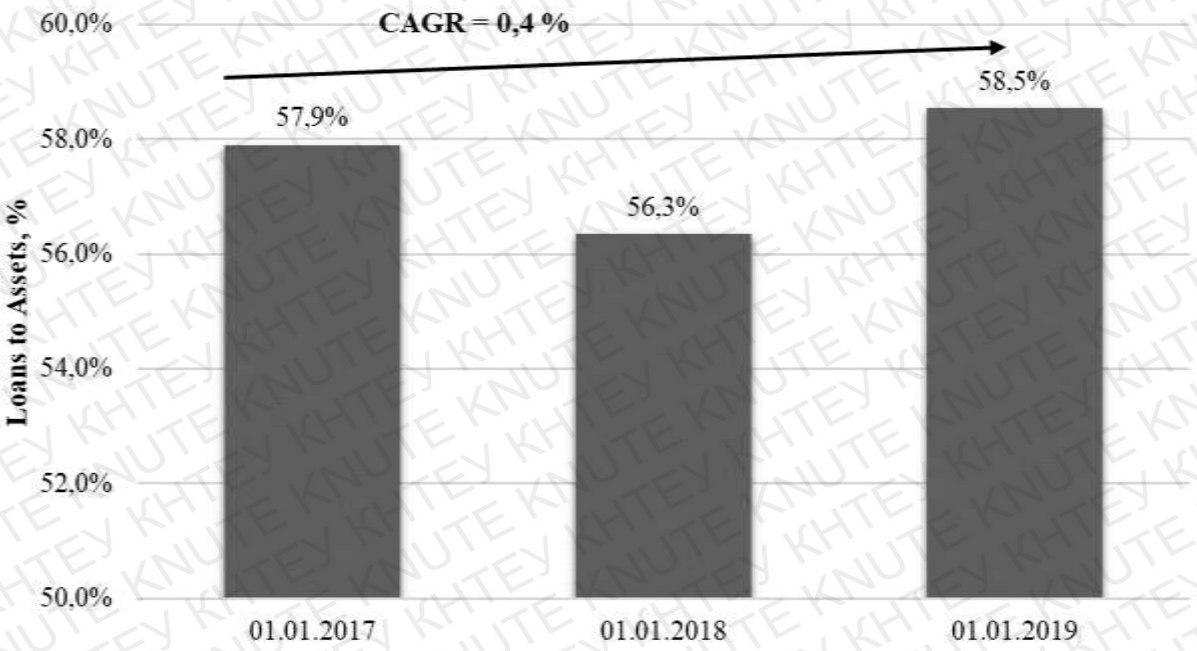
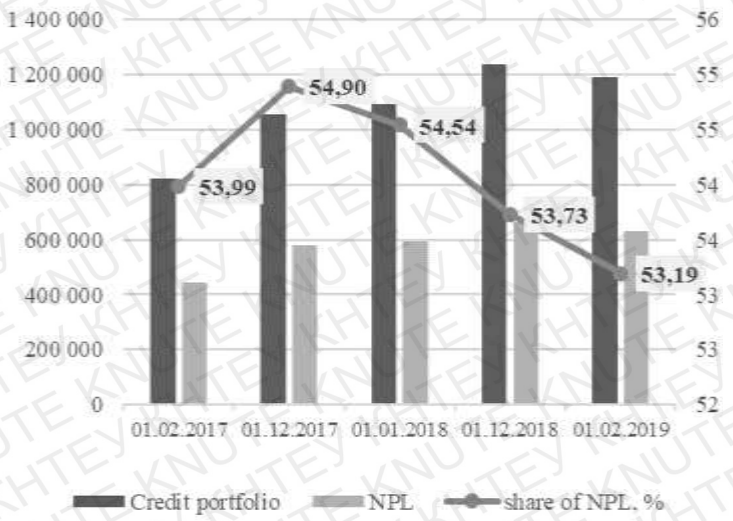


Figure 2.2. Dynamics of the share of loans in assets in the banks for the period 2017-2019

Source: created by the author on the basis [35]

If we compare the share of non-performing loans (NPL) in the total loan portfolio and the proportion of non-working assets in the total asset portfolio, the following conclusion can be made: the lending activity of the bank is highly risky, as each second loan in the banking system is defaulted.

It should also be noted that although the share of non-performing loans tends to decrease, it still occupies half of the share of the loan portfolio. The largest share of non-performing loans was at the end of 2017 that is explained by the completion of the procedure for clearing the banking system. That is why a large number of loans went into the default class, that is, the delay of payment for more than 30 days for individuals and over 90 days for legal entities. As of February 2019, NPL account for more than 53% of the bank's portfolio (Fig 2.3 a). Banks with a state share have a very large percentage of non-performing loans equal 70% (Fig 2.3 b). And the share of non-working loans in the PrivatBank among banks with state capital is 83.3% [35].



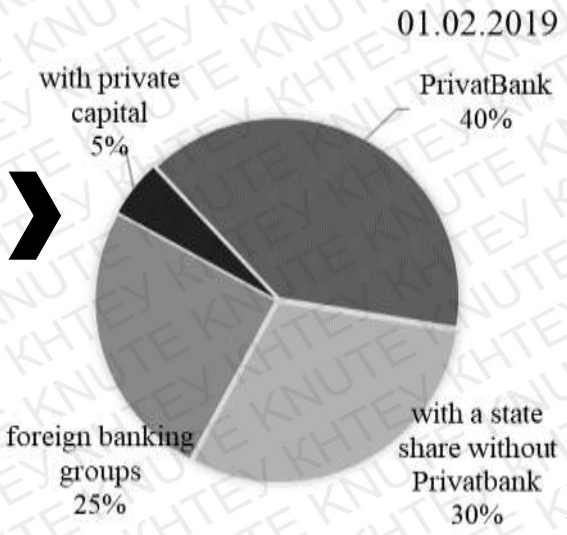


Figure 2.3 a. Credit portfolio structure Figure 2.3 b. NPL ratio in bank portfolio

Source: Source: created by the author on the basis [35]

Analyzing the relationship between GDP growth rates and the share of NPLs in gross loans (Fig. 4), there is an indirect relationship, the correlation coefficient is -0.63. That is, after the 2008 and 2014 crises, we observe that during this period, GDP growth decreased and the NPL growth rate increased.

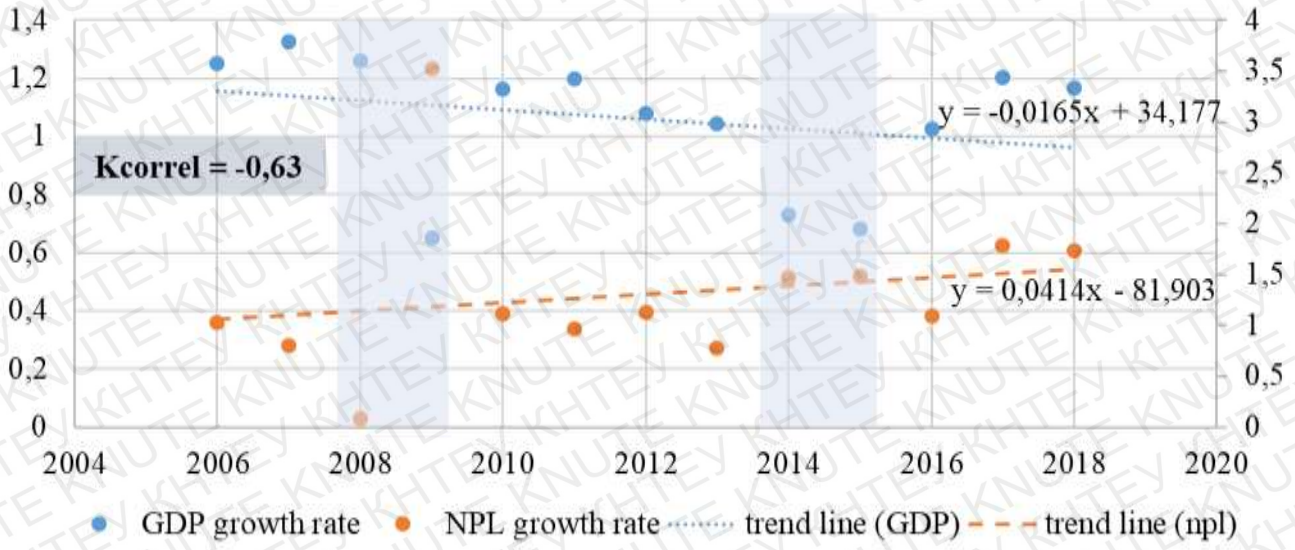


Figure 2.4 The relationship between GDP growth and the growth of the share of NPLs in Ukraine, 2005-2018

Source: created by author based on the basis of sources [63, 64]

In modelling credit risk one of the most important issues is to identify a credit event, which indicates that the damage occurred. Naturally, a credit event is a failure to pay, bankruptcy or default. The practical question, however, is how to determine that a loan that has not been repaid for a certain period of time is not really executed, which means that the loss should be recognized by the bank. To model credit risk, was provided credit risk sensitivity analysis.

The basic formula proposed by the Basel Committee in Basel II+ for calculating credit risk (1) was used for the sensitivity analysis:

$$EL=PD*LGD*EAD= PD \times (1 - RR) \times EAD, \text{ where} \quad (1)$$

PD = probability of default;

LGD = loss given default;

EAD = exposure at default;

RR = recovery rate (RR = 1 − LGD).

When modelling credit risk losses, several important issues need to be taken into account:

1. Deficits are relatively rare events compared to market losses. The lack of available data is a problem both for calibration of models and for testing.

2. Correlation between failures has a significant effect on the end result. They should not be underestimated.

3. It is necessary to take into account the wrong exposure (increasing the use of credit cards in case of increase of PD).

4. In case of deterioration, both PD and LGD may deteriorate. Assumptions about their mutual independence are not realistic [36].

For the analysis, we took data by the end of 2018, that is, as of January 1, 2019. Expected losses were taken as the sum of credit risk for individuals of all 5 class and legal entities of grades 1-10 according to NBU data. The amount of credit exposures is calculated in a similar way.

PD*LGD was calculated as the ratio of credit risk to exposures under risk. Using all these parameters and performing mathematical calculations, we calculated the loss in case of default using output data for the analysis of the sensitivity of credit risk as of 01.01.2019 (EL = 558196199 UAH; EAD = 1021459010 UAH; PD*LGD = 0,546 by source NBU [34].

For calculations, two parameters were used to determine the sensitivity of credit risk due to their changes. These parameters include probability of default (PD) and loss given default (LGD) and exposure at default (EAD). Therefore, it is important to simulate what will be the credit risk in different situations: either with increasing or decreasing credit indebtedness or with different variations of PD & LGD. Losses in the event of default are losses that are not covered by loan collateral, so different variations of this indicator are also important to analyze. The results of the changes of the given indicators are reflected in Table 2.1. Under the existing parameters, the level of credit risk is depicted in white. Light grey shows cases where, for various combinations of parameters, the credit risk is lower than the current one. In the ratio of PD & LGD, it is important to determine which index reduces, and which increases the product.

Table 2.1

Analysis of credit risk sensitivity to PD, LGD and credit portfolio

PD&LGD/ Cg EAD	558196199	0,3	0,4	0,5	**0,546**	0,6	0,7	0,8
80%	817167208	245150162	326866883	408583604	446556959	490300325	572017046	653733767
85%	868240159	260472048	347296064	434120079	474466769	520944095	607768111	694592127
90%	919313109	275793933	367725244	459656555	502376579	551587866	643519177	735450487
95%	970386060	291115818	388154424	485193030	530286389	582231636	679270242	776308848
100%	**1021459010**	306437703	408583604	510729505	**558196199**	612875406	715021307	817167208
105%	1072531961	321759588	429012784	536265980	586106009	643519177	750772373	858025569
110%	1123604911	337081473	449441965	561802456	614015819	674162947	786523438	898883929
115%	1174677862	352403359	469871145	587338931	641925629	704806717	822274503	939742290

Source: created by the author on the basis [2]

Even with a 15% increase in credit indebtedness, but with a reduced probability of a default of a bank's loan portfolio, the credit risk will be significantly lower than the current one. The dark grey zone shows options for which the credit risk will be greater than the current one. Therefore, it is important to prevent the exit of credit risk into the dark grey zone.

Moreover, we conducted a correlation-regression analysis to model the credit risk of the banking system and to find a correlation between total credit debt and default (non-performing) loans. To construct the linear regression equation, we took data for 19 periods (months), that is, the period from 01/08/2017 to 01/02/2019. We also denote credit debt as variable X and NPL volumes as Y. Since we have two linear equation parameters, the required regression equation will have the following form (2):

$$Y = a * X + b \quad (2)$$

Thus, performing the mathematical calculations (Annex F), we obtained the following equation, which describes the relationship between the two parameters given to us, namely: Y = 0.3895 * X + 184662.8883. Then, taken attention that the loan portfolio tends to grow, as recorded by the average annual growth rate of CAGR 0.4%, we took the median rate of growth of credit debt, which is 1.0036 to determine the estimated value of credit debt. After the calculations, we received the amount of credit indebtedness as of 03/01/2019: UAH 1 193 528 million and the volume of NPL: UAH 649 532.9 million. We conducted a correlation analysis to confirm the dependence of these parameters (correlation coefficient goes up to 1), which showed us a very strong interdependence of these indicators (table 2.2).

Table 2.2

Linear regression equation

	a=	0,389492239	0,389492239
	b=	184662,8783	184662,8783
	y=0,3895*x+184662,8883		
Kcorrel (excel) =	0,935353171	**x'=**	**1 193 528**
Kcorrel=	0,935353171	**y'=**	**649 532,9**

After conducting the correlation-regression analysis, we can conclude that although the lending activity of banks is increasing, however, managing the portfolio of non-performing loans is ineffective.

Also, for the analysis of the level of credit risk concentration in general in the banking sector, it is important to consider the significance and dynamics of economic credit risk ratios for the period from 2015 to 2018 (Fig. 5).

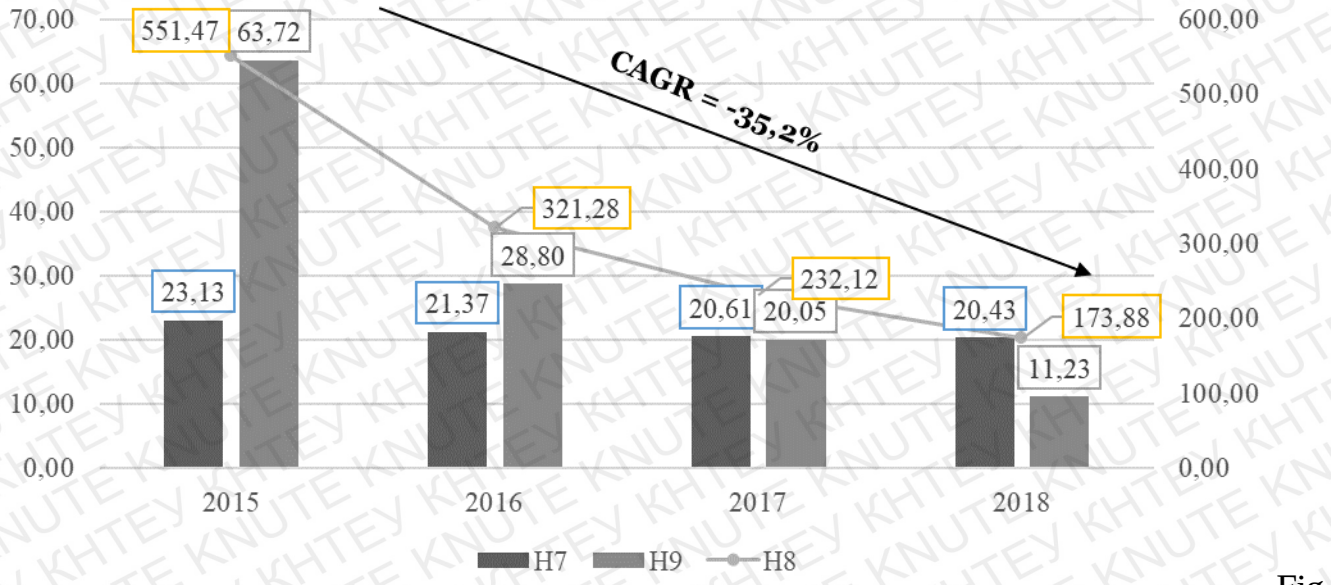


Figure 2.5. The level of credit risk concentration in the banking system during 2015-2018 years *[39]*

The overall situation over the last 4 years has improved markedly. Thus, we have a reduction of the economic standard of maximum credit risk per one counterparty H7 by 3%; reduction of the norm of large credit risks H8 more than 3 times; reduction of the norm of the maximum amount of credit risk N9 by 35% annually.

Currency risk and interest risk are heavily influenced by market risk. Today, we have a high level of dollarization (Fig 2.6) of the economy, which is the result of the lack of political and macroeconomic stability, past economic crises and high levels of inflation over many years of Ukraine's independence. The best way to strengthen confidence in the hryvnia is to continue the current monetary policy of the National

Bank aimed at ensuring price stability and reducing inflation to a level of 5% in the medium term.

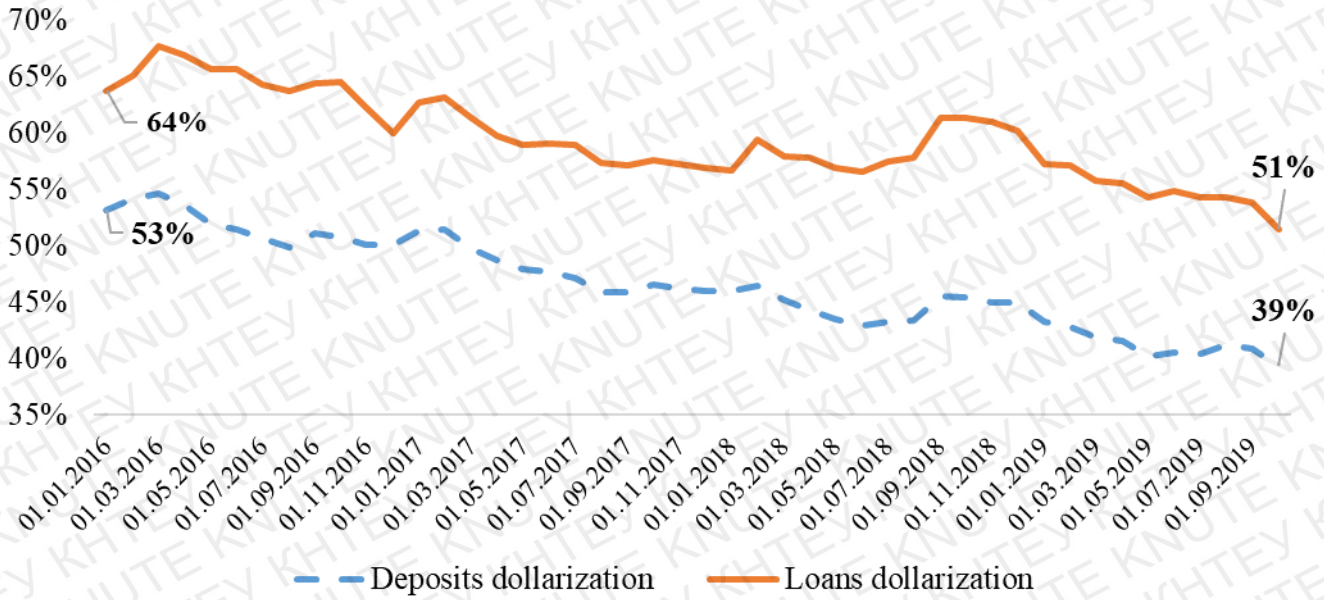


Figure 2.6. Level of dollarization of deposits and credits in the banking system of Ukraine

Source: created by the author on the basis [2]

In addition, the National Bank should pay much attention to the issue of decentralization from the point of view of macro-prudential regulation, in particular, through the establishment of certain requirements for banks, namely the establishment of requirements for the provision of funds.

Also important is the issue of returning large volumes of foreign debt payments in 2019, which will result in exchange rate risk. To strengthening the hryvnia on the world market, the National Bank signed an agreement to establish correspondent relations with the international depository Clearstream. This connection will simplify the access of foreign investors to the market of Ukraine's domestic state debt bonds (T-bonds) and will allow improving the currency structure of the state debt due to more demand for securities denominated in national monetary unit (UAH).

In 2019-2020, planned currency payments with interest will amount to $ 17 billion. Therefore, the key challenge for 2019 is how to attract enough resources to

refinance external and internal liabilities. The payout schedule is quite tense but manageable, subject to continued cooperation with the IMF. If Ukraine fulfils the program, the risk of a lack of funding will be significantly reduced. The agreement with the IMF provides access to funds of other creditors, in particular, the EU and the World Bank. Their loans will be used to finance budget needs. However, to fully cover funding needs, the government will be forced to place Eurobonds and actively attract resources in the domestic market [66].

Finally, it can be said that a loan portfolio in the Ukraine banking system has a very high level of credit risk. To date, the main task of the regulator should be the reducing the proportion of non-working loans in the overall portfolio. Although the National Bank of Ukraine provided some tools to reduce this risk as debt restructuring, most troubled borrowers have not yet taken advantage of them. An important direction in strengthening the hryvnia on the world arena is the continuation of minimization of currency and interest risk and increasing of public confidence in the national monetary unit.

2.2. Diagnostics of the banking supervision system

Every year, starting in 2018, the National Bank conducts a bank stability assessment. Resilience assessment involves asset quality review (AQR) and stress testing for the largest banks. The results of the bank-wide assessment are published at the end of each year. An asset quality rating is a review or evaluation assessing the credit risk associated with a particular asset. These assets usually require interest payments — such as loans and investment portfolios. How effective management is in controlling and monitoring credit risk can also have an effect on the what kind of credit rating can be achieved. Asset quality is an important determinant of risk, as such, analysts go to great lengths to accurately estimate asset quality and its impact on the overall condition of a business, bank or portfolio.

Many factors are considered when rating asset quality. For example, consideration must be put into whether or not a portfolio is appropriately diversified, what regulations or rules have been put in to place to limit credit risks and how efficiently operations are being utilized. Typically, a rating of one shows that asset quality is good and there is very little credit risk, while a rating of five can signify that there are major asset quality problems and issues that need to be managed. The quality of assets goes a long way in determining how assets are managed. As asset quality goes up, benefits include more liquidity, greater risk capacity, and a lower cost of funds. All of which can lead to higher valuation levels [44].

Previously, banking supervision was based on an assessment of banks' compliance with regulatory requirements - the so-called "Compliance-based approach". It is now complemented by a new approach, based on an assessment of the risks and quality of managing those risks in the bank, taking into account the analysis of the current state of the bank, the strategy and business plan for its development and an

assessment of how the bank will behave in the future. That is, the so-called "Risk-based approach" was introduced by using a new supervisory tool - the Bank's SREP (Supervisory Review and Evaluation) methodology Process).

The SREP shall be assessed in accordance with:

- Directive 2013/36 / EC (CRD IV) of the European Parliament and the Council on Access to Credit Organizations and Prudential Oversight of Credit Organizations and Investment Companies (Article 97) [41]
- Guidelines from the European Banking Authority on the Unified procedures and methodologies for the supervisory review and evaluation process (EBA / GL / 2014/13 19 December 2014) [42];
- Methods of assessment of banks during the travel away visa banking supervision, approved by the decision of the Board of the National Bank of Ukraine dated January 30, 2018 # 59-rsh [43].

The Bank Assessment Process (SREP) is continuous, carried out simultaneously by all banks by assessing the size of the risks and the quality of their management on the basis of information received from the NBU units, analysis of existing trends in the activities of banks, incl. comparing key performance metrics with “Peer-group” of such banks.

The Bank Assessment (SREP) is held annually on 1 January (subject to change). The assessment is updated quarterly, based on an analysis of changes in quantitative indicators and taking into account new material non-financial information. The Banking Supervision Division (SREP) is responsible for the Banking Supervision Division.

According to the Bank Assessment (SREP):

— Bank supervision strategy, incl. the need for early intervention measures;

— Bank's viability for the next 12 months and strategy's sustainability for 3 years;

— sufficient capital and liquidity to cover the risks;

— need for inspection

The degree of intensity of financial supervision of a bank depends on the assessment of the level of risk and the category of the bank (Fig 2.7)

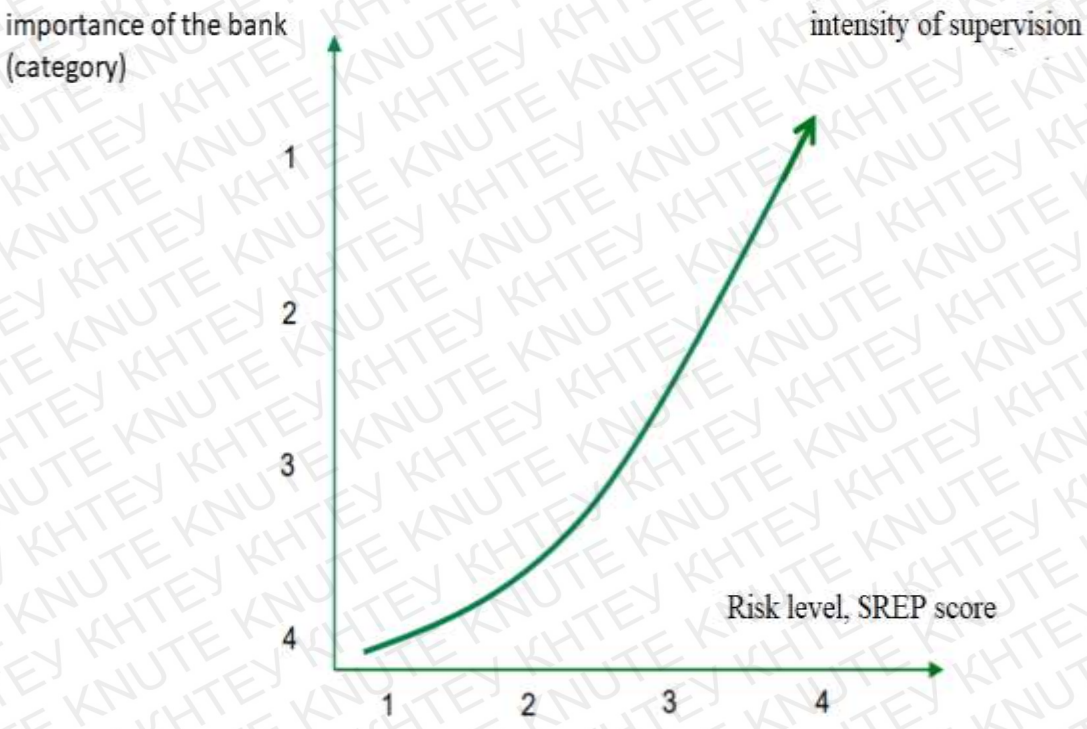


Figure 2.7 Intensity of supervision [43]

Importance of the bank (category) - is determined taking into account the size of the bank in the banking system, structure and complexity of bank operations. Risk Level (SREP score) - determined based on business model performance, capital and liquidity adequacy, individual risk assessment and corporate governance quality.

The National Bank of Ukraine has identified 4 categories of banks for grouping:

- ✓ Category 1 - banks that are identified by the National Bank as systemically important and other banks that affect the system in terms of their size, structure and internal organization, and the nature and complexity of operations;
- ✓ Category 2 - Large banks (except those not in Category 1) that carry out a significant volume of operations, including in international markets, and provide a wide range of credit and financial services to retail and corporate clients;

- ✓ Category 3 - medium and small banks, which cannot be categorized as categories 1 and 2, and provide a predominantly limited range of banking and financial services to retail and corporate customers;
- ✓ Category 4 - other small banks operating within the country that cannot be categorized as 1-3, have a negligible share of the banking sector in the relevant areas and have a limited range of banking and financial services.

Distribution of banks into categories based on systemic influence and evaluation of SREP is a continuous process (Fig 2.8)

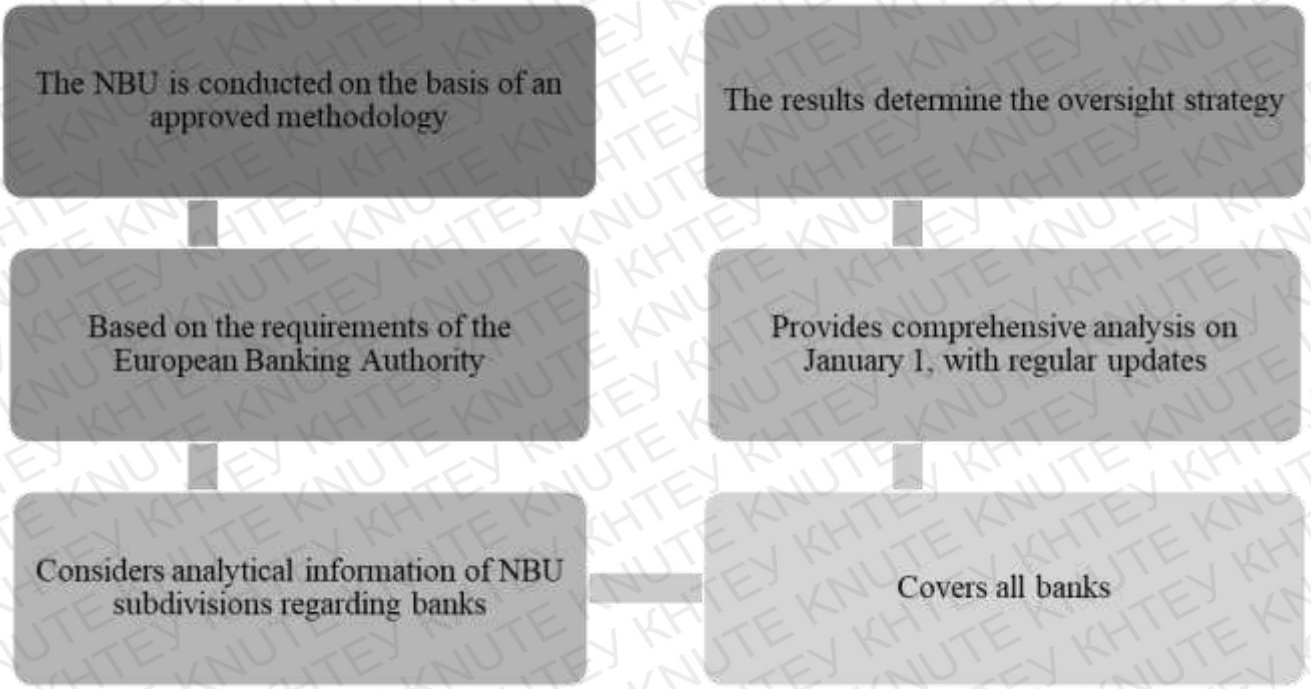


Figure 2.8 Evaluation process of SREP [43]

General Approaches to SREP Banking are based on four elements (Table 2.1):

1. Business Model Analysis and Evaluation:
   - viability assessment: the ability to generate an acceptable level of income over the next 12 months, given the value of performance indicators, the

adequacy of the bank's financing structure of its business model, risk appetite (risk appetite);

- assessment of the bank's sustainability strategy: the ability to generate an acceptable level of income for at least the next 3 years in accordance with the approved bank strategy and business plan (including taking into account the bank's past strategy).

2. Assessment of the level of organization of corporate governance and internal control is based on the results of performance evaluation:
    - corporate governance systems as a whole;
    - corporate and risk-taking culture;
    - organizational structure and functioning of bodies management (supervisory board and board of directors);
    - remuneration policies and practices;
    - risk management systems;
    - internal control systems;
    - AML risk
3. Capital adequacy determination of capital adequacy (its size and structure) to cover the main risks inherent in the bank's activities:
    - credit risk;
    - interest rate risk;
    - market risk;
    - operational risk;
    - other types of risk inherent in the Bank's activities over the next 12 months, identify measures to address potential capital shortages
4. Liquidity sufficiency:
    - assessment of the sufficiency of liquid assets to cover liquidity risks and financing;

- Determination of the measures needed to manage the potential liquidity shortage.

Table 2.1

Financial sustainability indicators of the bank-like institutions on an aggregated basis, % (at the end of the period)

Indicators	01.01.2017	01.01.2018	01.01.2019	01.09.2019
Capital adequacy				
Regulatory capital (Tier I) to risk- weighted assets	12,69	15,52	16,1	0,18
Regulatory capital (Tiers I + II) to risk-weighted assets	-	-	-	0,13
Asset quality				
Non-performing loans to gross loans	53,99	54,54	52,85	50,20
Non-performing loans regulatory capital	405,5	513,7	575,2	401,3
Profitablity				
Return on assets (before taxes)	-12,60	-1,93	1,69	4,91
Return on equity (before taxes)	-116,74	-15,84	14,67	39,94
Interest margin to net income	-27,7	-200,2	327,0	119,4
Non-interest expenses to net income	-162,1	-504,2	512,4	160,1
Net income to assets	-9,2	-1,4	1,2	1,0
Interest rate margin	2,5	2,9	3,8	2,8
Liquidity				
Loans to deposits ratio (max. 80%)	89	88	93	90
Liquid assets to total assets (min 15%)	18	15	15	20

Source: own calculations based on sources [45; 46]

So net interest income and fee and commission income are growing rapidly The sector's net interest income rose by 43% YoY, mainly on the back of a substantial decrease in funding costs, especially the cost of retail deposits – interest expenses on

retail deposits declined by 17% YoY. The net profit of solvent banks in Ukraine in January-June 2019 amounted to UAH 31 billion, which is 3.7 times more than in the same period last year (UAH 8.3 billion).

The NBU pointed to three factors of growth in bank profits: a 20% increase in net interest income of banks, to UAH 39 billion, a growth in net commission income by 17%, to UAH 21 billion, and a positive result from revaluation and from transactions on currency sale and purchase – UAH 10.4 billion. The record high level of profits was due to a pickup in bank lending, primarily in retail hryvnia lending, which grew by more than 30% yoy. The increase in the banking sector profit was also prompted by lower bank interest rates on retail loans throughout most of the year and a substantial drop in provisioning, which shows that banks performed an adequate evaluation of their assets and created provisions accordingly in the previous years. We expect banks to be successful in terms of profitability in 2019, as lending volumes will continue to grow.

The efficiency of both the bank and the banking system's activities depends essentially on the correctness of the operational process organization and constant internal control. Therefore, in order to improve the operational risk management process and prevent possible losses by timely identifying operational risks that could adversely affect the activities of banks and its clients, and taking appropriate measures to prevent such risks, the National Bank has developed the three levels of protection model.

1. The first line of defence involves identifying and evaluating operational risks, taking the necessary management measures and reporting on such risks.

2. For the second line of defence characteristic development, implementation, development of operational risk management system; assessment of the operational risks size of the bank; advising bank employees on operational risks; formation of the results of the operational risks management in the bank and further control over the implementation of measures to manage operational risks.

3. The third line of protection is the assessment of the operational risk management effectiveness and internal control system [40].

Thus, the effects of introducing SREP banks' valuation are: consolidation of actions of all subdivisions of the prudential block is ensured for defining a unified banking supervision strategy; improved efficiency of the use of supervisory resources by applying the principle of proportionality in determining the volume, frequency and supervision of banks, depending on their level of risk and systemic impact, the banks of Ukraine have been evaluated taking into account the approaches used in the countries of the European Union, which makes it possible to compare Ukrainian banks with banks other countries in terms of their viability; increased supervisory response in the early stages of identifying bank risks.

PART 3.
RECOMMENDATIONS ON DEVELOPMENT OF FINANCIAL SUPERVISION IN THE BANKING SYSTEM BASED ON RISK-ORIENTED APPROACH

3.1. Analysis of international financial supervision risk-based practices and standards

Without experimental research design, economic performance monitoring, it is difficult to follow cause and effect relationships in financial supervision on the basis of a risk-oriented or forward-looking approach. This is all the more so when performance measurement is made at a strategic level, when a wide range of externalities (such as global economic changes) can influence the desired outcome of oversight. The complexity of the financial sector also contributes to the challenge of measuring performance, as the number of controlled institutions is diverse, while innovation and competition mean that financial markets are also constantly changing. As a result, financial surveillance tends to focus on compliance when trying to show a cause-and-effect relationship between efforts and changes in market structure or behaviour of market participants.

The year 2008 will be marked in history as the start of the global financial crisis that has seen failures in many financial institutions and governments having to support those financial institutions that were seen as too systemically important to fail. The debate over the causes and whether the crisis could have been avoided will continue for many years. Some criticisms have already been levelled at supervisors for failing to ensure that institutions understood and dealt with the risks that they were undertaking and failing to ensure that institutions could raise capital from conventional sources when the need arose. Only time will tell whether these criticisms are justified,

however, the crisis does contain lessons for supervisors in the imprudence of relying on third party judgments and the need to approach supervision with experience, knowledge and importantly a healthy degree of scepticism. This is equally true whether supervision is compliance or risk-based.

As noted in the first section, there is a classification, which will divide 4 areas of financial supervision. The Table 3.1 below shows the structure of approaches to financial supervision in the world by region

Table 3.1

Model of supervision by region [47, 48]

	Africa		America		Asia & Pacific		Europe		Middle Eas		Total	
Institutional	9	10	9	52%	7	50%	10	30%	4	66%	39	50%
Functional	0	0	1	6%	2	14%	5	15%	1	17%	9	11%
Integrated	0	0	1	6%	2	14%	11	33%	0	0%	14	18%
Twin Peaks	0	0	6	36%	3	22%	7	22%	1	17%	17	21%
Total	**9**	**100**	**17**	**100%**	**14**	**100%**	**33**	**100%**	**6**	**100%**	**79**	**100%**

Thus, the model of financial supervision in 79 countries was considered. In 50% of the countries surveyed, the model of financial supervision is institutional. This model is very logical because each institution has its own rights and responsibilities and is responsible for its own oversight area. The institutional approach is one in which an institution`s legal status (for example, a bank, broker-dealer, or insurance company) determines which regulator is tasked with overseeing its activity from both a safety and soundness and a business conduct perspective.

For example, this model is used in China, Hong Kong, Mexico (Figure 3.1). The Law of the People's Republic of China on Banking Regulation and Supervision, passed by the National People's Congress (NPC) in 2003, authorizes the CBRC to oversee all banks and all non-banking financial institutions. China's financial supervision system

is institutional in nature but is exhibiting functional aspects as the economy and financial markets develop. It includes a central bank (PBC) and three parallel institutional supervisory agencies (CBRC, CIRC, and CSRC), as well as others.

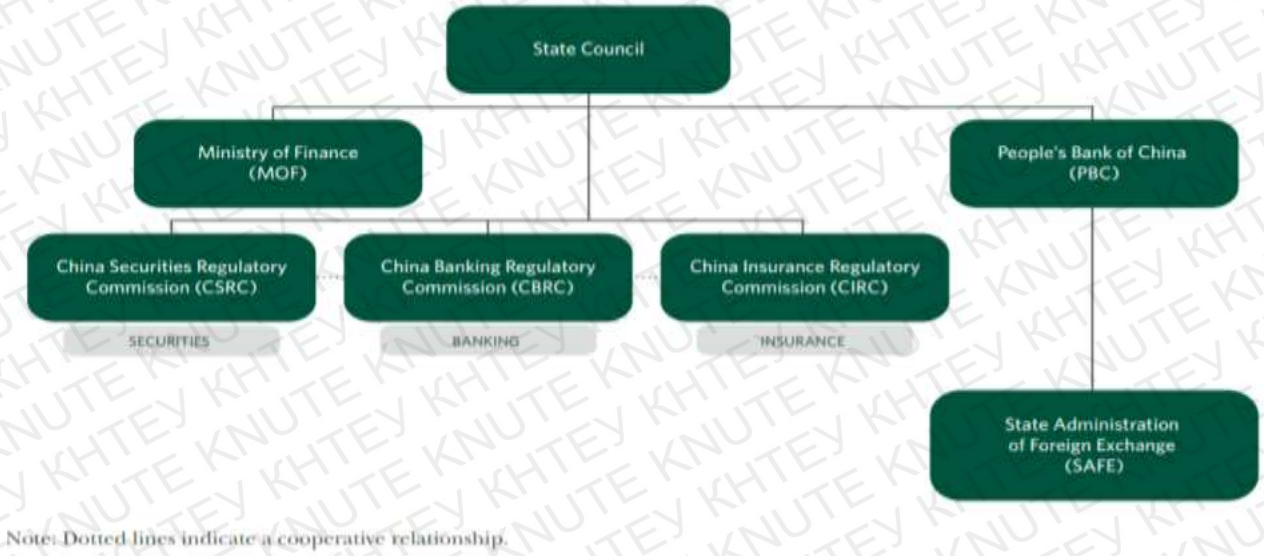


Figure 3.1 Financial Services System Regulatory Structure, China [3]

Hong Kong's financial regulatory system can be characterized as an institutional system with functional characteristics, in which the following individuals and entities have a role.

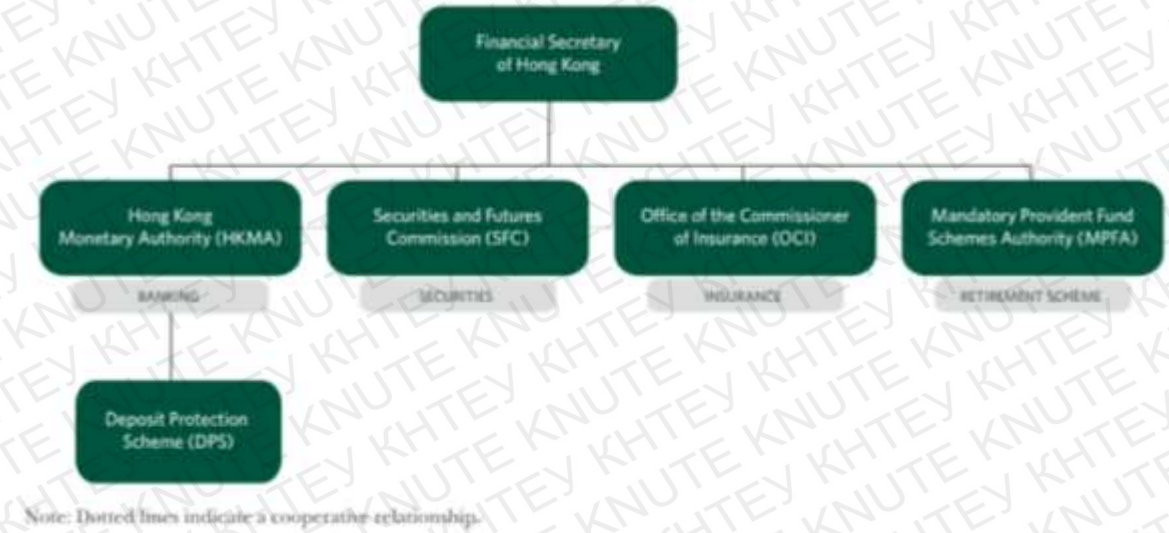


Figure 3.2 Financial Services System Regulatory Structure, Hong Kong [3]

The current Mexican financial regulatory structure can be described as an institutional system. Seven entities are in charge of regulating and supervising the financial system.

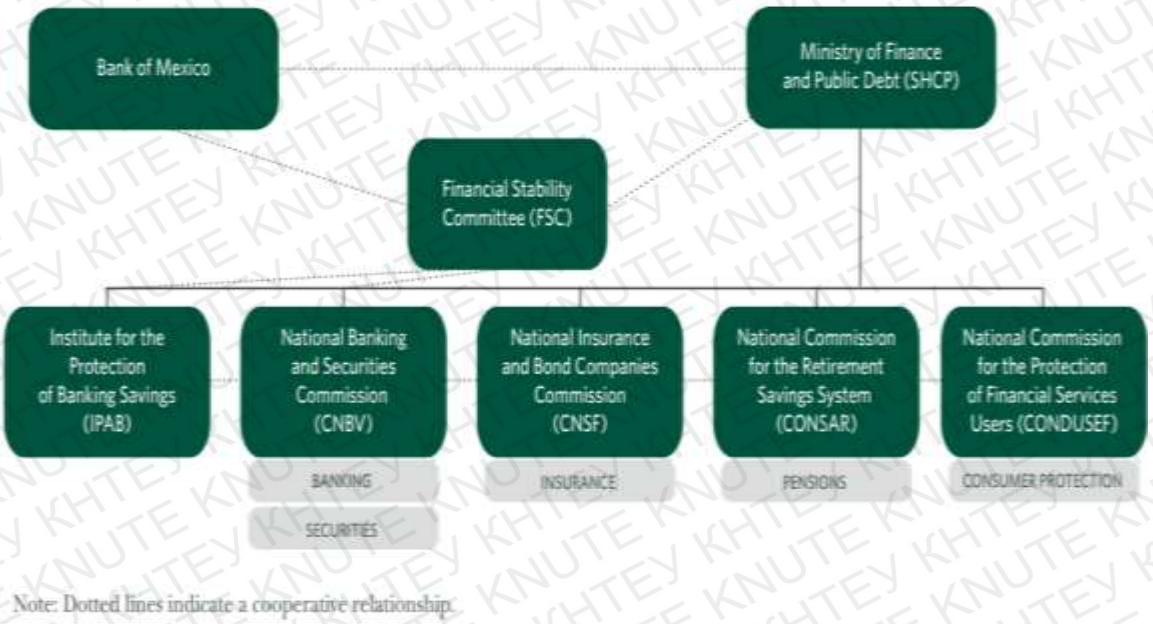


Figure3.3 Financial Services System Regulatory Structure, Mexico [3]

The functional approach is one in which supervisory oversight is determined by the business that is being transacted by the entity, without regard to its legal status. Each type of business may have its own functional regulator. This approach use in Brazil, France, Italy, Spain (Annex C). In Brazil coordination between the governor of the BCB and the Minister of Finance occurs through the CMN. Membership of the CMN allows for sharing of information related to supervisory actions of the BCB. Coordination between the BCB and the CVM is based on standards set by the CMN. In addition, the BCB has two agreements in place with other agencies addressing matters of coordination and cooperation: an agreement between the BCB and the CVM of February 2004, which concerns exchange of information and other activities to better perform respective tasks; and an agreement between the BCB and the SUSEP of July

2005, concerning the coordination of activities and information exchange (Appendix C).

The integrated approach is one in which a single universal regulator conducts both safety and soundness oversight and conduct-of-business regulation for all sectors of financial services business. For example, this model is used in Canada, Germany, Japan, Qatar, Singapore, Switzerland, The United Kingdom (Appendix C). The Twin peaks approach, a form of regulation by objective, is one in which there is a separation of regulatory functions between two regulators: one that performs the safety and soundness supervision function and the other that focuses on conduct-of-business regulation. For example, this model is used in Australia, The Netherlands (Appendix C).

We also decided to analyze the current situation in Ukraine, namely in terms of credit risk and how effectively financial supervision was carried out on the basis of risk oriented approach. So we researched the non-performing loans sector in the context of the 2016 - 3Q 2019. We have taken the ratio of non-performing loans to gross loans to determine Ukraine's place in the world. (Annex E)

Thus, we can observe, the distribution of non-performing loans to gross assets in the world according to the European Central Bank. The figures show that the average coefficient is 7.5%, the median is 3.9%, the fashion is 2%. In practice, the statistical indicator of the median is most often used because it most fully shows the big picture. The coefficient in Ukraine in 2016 was 30.5%.

A significant increase of the coefficient is observed during 2016 - 2017, which is explained by the peak of the procedure of withdrawal of banks from the market and the automatic growth of the portfolio of non-performing loans in the banking system of Ukraine. Even in 2016, the coefficient exceeded the median of the world by 7.5 times. Ukraine has the highest ratio among all countries of the world represented by the European Central Bank and in 2017 reached almost 55% of non-performing loans in the total loan portfolio.

So, by implementing a risk-oriented approach, effectively prudential and financial oversight, the use of instruments that help reduce non-performing loans NPLs to Gross Assets coefficient is reduced by 2% and 5% to 49.4% at the end of Q3 2019. It is worth noting that Ukraine is at the same level and even higher with such countries as Cyprus (offshore zone), San Marino, Greece (defaulted), Equatorial Guinea, Chad, Central African Republic.

To achieve even greater success, it is necessary to adopt the experience of other countries, mostly European, because we have a slightly similar economic model of the economy. The average coverage ratio of NPLs was 46.0% as of June 2018 (EU weighted average). It had increased by 1 pp in June 2018 compared with 1 year earlier. This trend has been supported by a faster decline of NPLs than of provisions during the last three quarters.

Higher coverage ratios give banks more room to reduce their NPLs through, for example, sales. NPL securitisation is only cited by a few banks as a possible strategy to reduce NPLs. There can be various reasons for this, such as the complexity of structuring NPL securitisations and potentially less investor interest to conclude such transactions because of stringent rules compared with whole-loan sales or the lack of standardisation for NPL securitisations. NPL secondary markets also remain particularly vulnerable to economic and political developments.

We also examined the growth rate of NPLs by country, based on data published by the European Central Bank. The Figure 3.5 below shows the countries with the highest growth and the largest decrease in this indicator. Thus, the most conscientious countries in reducing NPLs in the portfolio are Cyprus, Burundi, Albania, Uganda, Portugal, Hungary, Romania, Grenada, Bulgaria, Itali, Central African Republic, Croatia, Ireland, Slovenia, 4 of which are neighboring countries of Ukraine. The countries with the highest increase in the NPL ratio are Greece, which declared a default in 2015 and Ukraine with a record growth of 2916 -2017 over 24%.

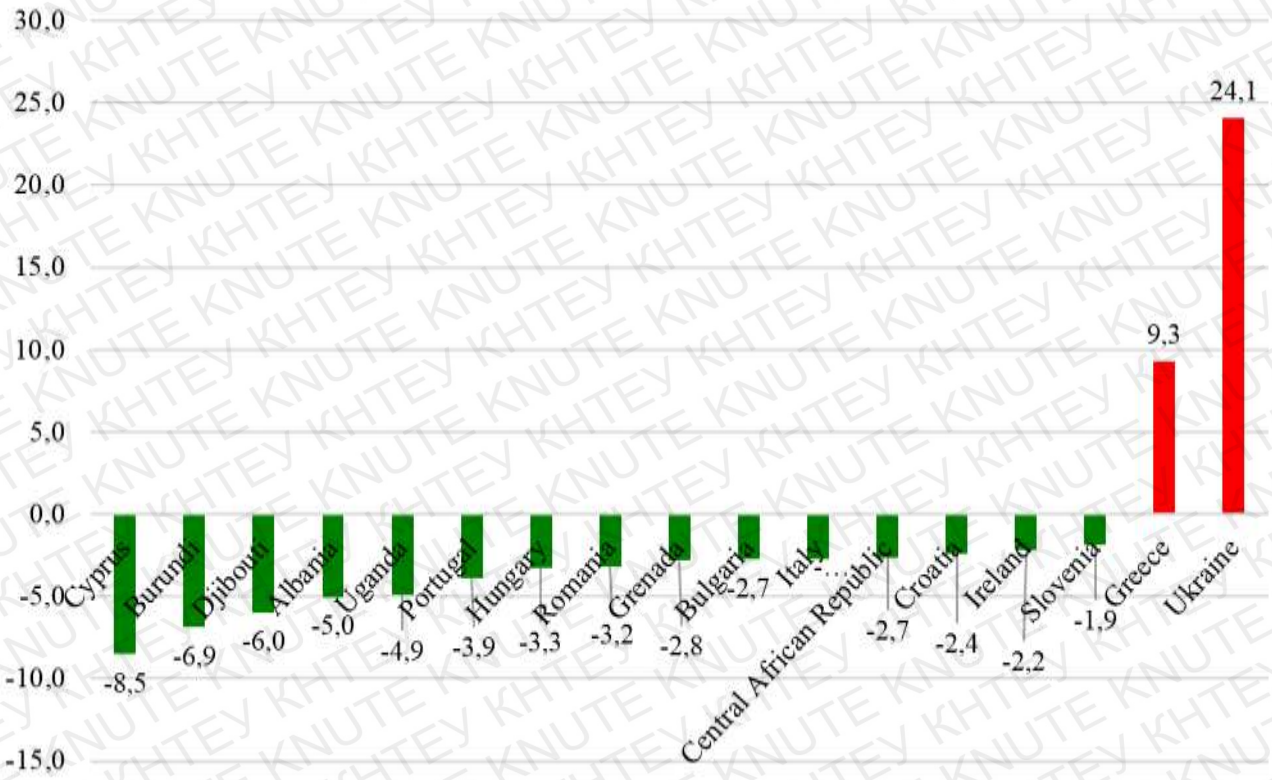


Figure 3.5: NPL growth rate 2016 - 2017, %

Source: author estimation on the basis [49]

To assess Ukraine's place among other countries, especially EU countries, we have compiled ranked charts by 8 criteria for supervisory regimes and practices. And ranked charts with 6 criteria to evaluate legislation and court conditions. Thus, the following criteria were used to evaluate supervisory practices: general oversight, identification and classification of NPLs; NPL evaluation and provisioning, NPL write-off, security assessment; working with NPLs in banks; prudential reporting; on-site/off-site supervision. Measuring scale from 0 to 5 points, where 0 points are the worst practice, 5 points is the best (Figure 3.6)

The results of the research are presented in graph by countries of the EU, Ukraine for 2016 and Ukraine for 2019.

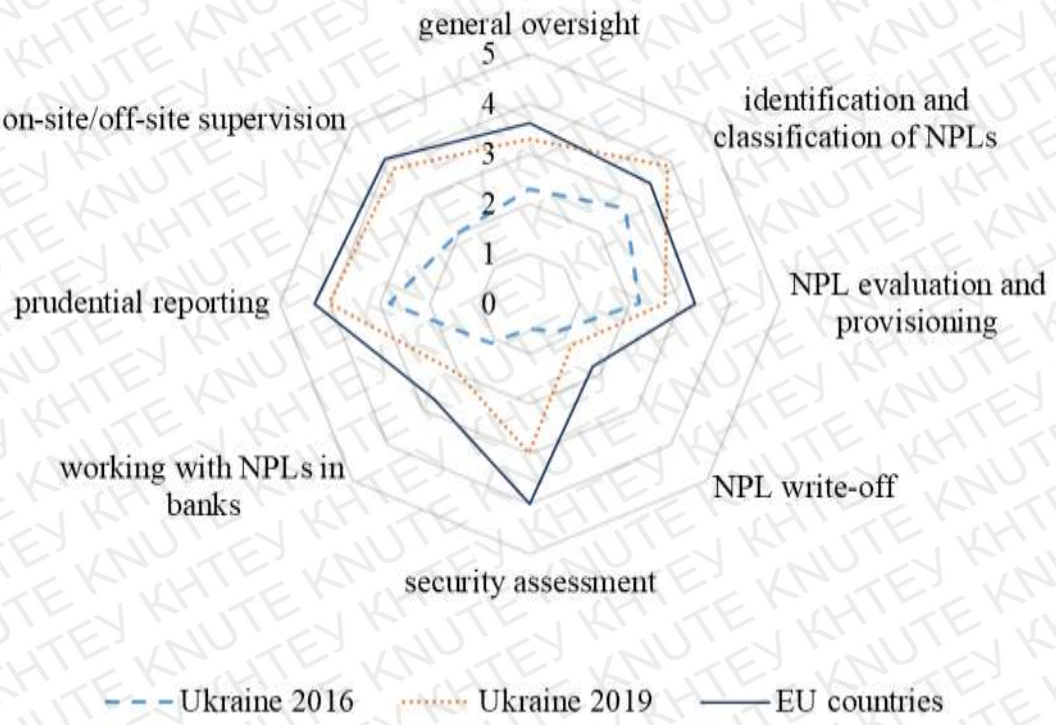


Figure 3.6 Comparison of EU and Ukrainian supervisory practices in 2016 and 2019 [67]

Selected EU countries are Ireland (IE), Spain (ES), Cyprus (CY), Slovenia (SI), Portugal (PT), Italy (IT), Germany (DE), Greece (GR). The weakest category among EU countries is the write-off of NPLs. Because this recognition of bad debtors involves recognition of large expenses, which reduces the bank's profits. In order to properly debit accounts, a system of credit provisioning must be effectively developed. EU best practices in the categories of prudential reporting and on-site and off-site supervision.

If we analyze the place of Ukraine in terms of categories, in 3 years there was a significant breakthrough in prudential reporting and assessment of security. Prudential reporting has seen significant improvements as NBU executives hold strong and steadfast views in the future to move to forward looking risk-oriented approach. With regard to security assessments, the national bank tightly controls and verifies appraisers

in the good faith of their work. And in the case of misconduct, informs the appropriate authorities for fines or cancellation of the license.

Based on the assessment of the European Central Bank, we have estimated these categories by country, with a median and a median to compare the adequacy of results (Table 3.2).

Table 3.2

Score assessment of supervisory practices across countries

	IE	ES	CY	SI	PT	IT	DE	GR	MEAN	MEDIAN	UA 2016	UA 2019
general oversight	4,2	3,9	4,3	2,9	3,2	3,6	3,6	3,4	3,6	3,6	2,3	3,3
identification and classification of NPLs	4,9	4,8	3	3,6	3,2	3	3,4	3,4	3,7	3,4	2,7	3,9
NPL evaluation and provisioning	4,3	5	3,6	3,1	3,3	3	2,8	3,3	3,6	3,3	2,2	2,7
NPL write-off	1,8	3,6	1,5	3,2	1,8	1,6	1	2,5	2,1	1,8	0,8	1,2
security assessment	4,2	4,3	3,8	3,1	4,6	1,2	4,9	3,1	3,7	4,0	0,5	3
working with NPLs in banks	3,4	2,7	3	3,8	2,3	2,3	2	2,7	2,8	2,7	1,1	2
prudential reporting	4,5	5	4,5	4,6	4,1	4,1	2,8	3,8	4,2	4,3	2,8	4
on-site/off-site supervision	4,4	4,7	3,1	3,7	4,1	4,1	4,2	3,5	4,0	4,1	2	3,8

Source: ECB [67] and author estimates

Best practices for supervisory oversight are in Cyprus, Ireland and Spain through the introduction of mandatory regulations and recommendations for new loan issuance, loan monitoring, loan delinquency and provisioning, overdue debt management, credit sale / acquisition, and credit risk management. Such recommendations provide a link between limit systems, creative strategy and risk appetite.

The best practices for identifying and classifying clients are Ireland and Spain. In addition, for the full implementation of EBA ITS regulations on NPLs, additional criteria have been set for attribution to NPLs and restructured loans. Also, non-performing loans will be covered by overdue loans (90+ days), NPLs for collateral collateral, NPLs for write-offs.

Best practices for assessing and reserving NPLs in Ireland and Spain. Thus, all banks are required to comply with IFRS standards. To ensure early recognition of impairment, specific guidance will be provided on the factors to be taken into account in assessing possible impairment: debt service to yield (interest coverage), debt load (debt to EBITDA), financial result, net worth, development forecast

The best in the writing of the NPL are Slovenia and Spain. For example, the criteria for writing off the loan for individual analysis are the recognition of the borrower in the bankruptcy process at the stage of expected liquidation or liquidation, the borrower with irreparable deterioration of solvency or secured loans with a maturity of more than 3-4 years, unsecured loans over 1 year.

Best practices for security assessment are in Germany, Portugal, and Spain. The recommendations relate to the observation of the white and black boobs of the assessors. there is a certain frequency of independent evaluation: for eomertsynoy real estate up to 12 months, for residential real estate up to 3 years. Also, banks are required to collect and document information on compensation for damages to justify LGDs. In addition, there are registers of information about the price conditions for the sale of real estate, on the basis of which the average prices are calculated.

The best practices of Ireland and Spain are applied to assess banks' work with NPLs. Thus, recommendations were made regarding the organization and functions of the NPL units, the assessment of the resilience of the restructuring conditions, and the drawing up of a Code of Cooperation with Non-paying Borrowers, such as in Greece and Ireland. There is a distinction between short-term and long-term restructuring conditions, with the benefit of the latter on the part of regulators, as for more

sustainable solutions. Moreover, requirements will be established for the internal audit of banks regarding the critical assessment of the collapse of the non-performing loan portfolio and the development of an improvement plan. In the prudential reporting category, Italy and Spain are the best. Depending on the volume and quality of NPLs, it is assumed that additional reporting requirements are imposed on EBA ITS requirements, such as monthly reporting instead of housing, reporting to individual large borrowers. It also monitors the accuracy and consistency of reporting through on-site and off-site monitoring of sanctions in case of violations. NPL data are publicly available on a quarterly basis as part of a regular review of reports and other regulatory material.

In the field of on-site and off-site supervision, Italy and Spain are the leaders. On-site and off-site surveillance efforts focus on the same issues that are determined by risk-based analysis. A centralized assessment of large borrowers throughout the banking system is also carried out. And the practices of individual banks in dealing with NPLs are strongly analyzed by experts of on-site and off-site supervision. Depending on the relevance of the NPL problem in the banking system, the supervision carries out thematic surveys.

Thus, since Ukraine belongs to countries with financial supervision based on an institutional approach, the study of these practices is most needed. Research on best practices should be a targeted and important area of activity of the National Bank of Ukraine. The NBU is working in the right direction and has made significant progress in recent years. Strengthening of the prudential block and creation of additional departments specific to the risk management of NPLs.

3.2. Algorithm for conducting financial supervision in banks based on risk-oriented approach.

Supervisors need to pay particular attention to initial and ongoing training and the provision of detailed guidance to deal with the possibility of inconsistency further. This requires a standard action algorithm that can be applied in any situation to financial supervision based on a risk-oriented approach. The guidance needs to extend to the attributes for each part of the control environment. The basis for constructing the algorithm should be the prevalence of content over form. It must exclude the possibility of situation when bank or other financial institution meet regulatory requirements at the same time having major problems not revealed by supervision. The initial algorithm should give signals where problems are possible, and determine the level of detalization and deepness of their analyses.

The outcomes of all the components of the risk assessment should summarized in a general risk model. The model generally summarizes each risk and control factors measured and condenses these into an overall risk assessment. The sophistication of the model depends on measurings used by supervisory agencies for resulting the risk assessment. Simple risk models usess individual consequences and probabilities in qualitative terms i.e. very high, high, medium and highly likely, likely, etc. More sophisticated models express consequences and probabilities in qualitative and quantitative terms. Clearly, the more granularities exist in the initial measures, the more valid the final outcome. The most sophisticated risk models assign weights to risks to reflect the fact that the significance of individual risks vary between institutions.

For supervisors using RBS, the external ratings provided by rating agencies can add another validation to an authority’s risk scoring model. If the model is calibrated correctly, it should be possible to observe a correlation between the supervisor’s risk

assessment and the agency's external rating, for example, agencies may assign an AAA or AA rating to an institution which the supervisor considers to be low risky, or an institution which the supervisor rates as high risky may be rated sub-investment grade by the agency. While the credit ratings of external agencies can be helpful in checking the calibrations of an authority's risk model, they should not be used as a substitute for effective supervision, as events leading up to the global financial crisis have shown. Supervisors should analyze and comment formally on each risk identified using the measurement tool and the quality of each of the management controls, which was used in the current situation. Under RBS, it is not sufficient to identify these elements; a supervisor must perform a detailed analysis. The supervisors are expected to be able to justify the ratings that have been assigned to each risk. Authorities that design proper templates increase the consistency between ratings when the templates are used in conjunction with comprehensive guidance materials.

It is very important to identify how often should risk assessments be reviewed. The short answer is every time the supervisory agency obtains information about an institution. RBS is a dynamic process and the risk assessment Risk-Based Supervision should be reviewed after each onsite and offsite review. Where other information comes to the supervisor's attention, this should trigger a review of the supervisor's risk assessment. Moreover, an RBS approach requires supervisors to review the assessment of the credit risk rating of all financial institutions or group that are connected when the external credit rating of a financial institution is downgraded [54].

RBS model refers to the whole set of procedures, processes, mechanisms and practicalities allowing competent authorities to exercise their financial supervisory powers in a way that is commensurate with the identified financial risks.

First, it is necessary to check the suitability of the bank in stressful conditions by the following indicators (Figure 3.7) in order to see how much capacity and resources the bank has to overcome the risk and crisis phenomena. The validation should not take the form of, for example, the coefficient corresponding to the nominal values. For

example, there is a group of 3 related companies. And one of them has a problem with liquidity. This situation is not very critical, because of othet company can help the first company to cover this liquidity gap. In result, certain critical conditions will be created and then the results will be observed and assumptions will be made as to how the bank will behave in these situations.

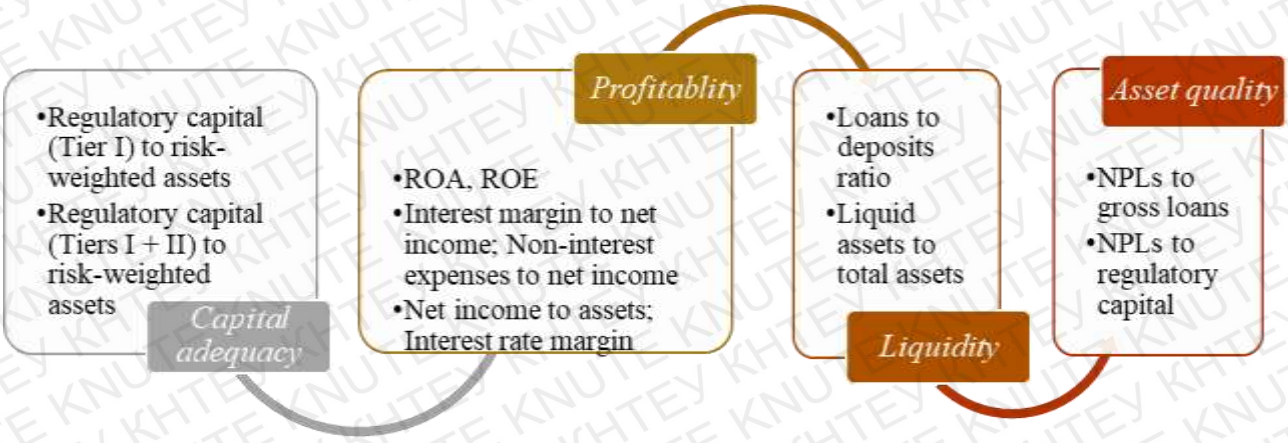


Figure 3.7 Financial sustainability indicators of the bank and other deposit institutions on an aggregated basis

It is necessary to create a system of visualization of important indicators in order to constantly monitor the changes and respond quickly to changes of bank performance. This approach will allow peaks to be detected as soon as possible, as values that do not meet regulatory values may be displayed immediately. And so, the supervisor's response will be faster. For example, the Annex B shows a possible layout of such a rendering. The table shows the NBU standards for 2016 and 2019. You can see that the number of violations has decreased many times over. So this visualization method helps to detected discrepancies in the programming system immediately. And this picture gives a signal to supervisor on further analysis, which is required whether the bank adheres to the standards or not, and immediately responds and demands to the bank to take actions to comply with the relevant normative. Therefore, visual perception is faster than mental perception

The Supervisory framework uses some elements and indicators to facilitate a holistic risk assessment of a financial institution by identifying the its primary risks. For this purpose, a risk matrix is used to indicate significant activities, the type and level of inherent risks, and the adequacy of risk management over these activities; as well as to determine net risk assessments for each of these activities and the overall risk of the financial institution. The risk assessment process includes the following stages:

- Identifying significant activities, such as business lines, entities or processes
- Assessing inherent risks for each significant activity;
- Assessing the quality of risk management controls and mitigants;
- Determining the importance of each net risk;
- Adjusting the overall net risk by taking into account the impact on capital, earnings and liquidity to determine the financial institution's composite risk rating.

However, it should be noted that there may be problems with measuring the effects of financial supervision because it may not be noticeable immediately. Some changes will come in a short time, others will take even more than a year to make the results clear. But the effects will accumulate as a "snowball" and will be effective or allow other initiatives to improve supervision. (Figure 3.8)

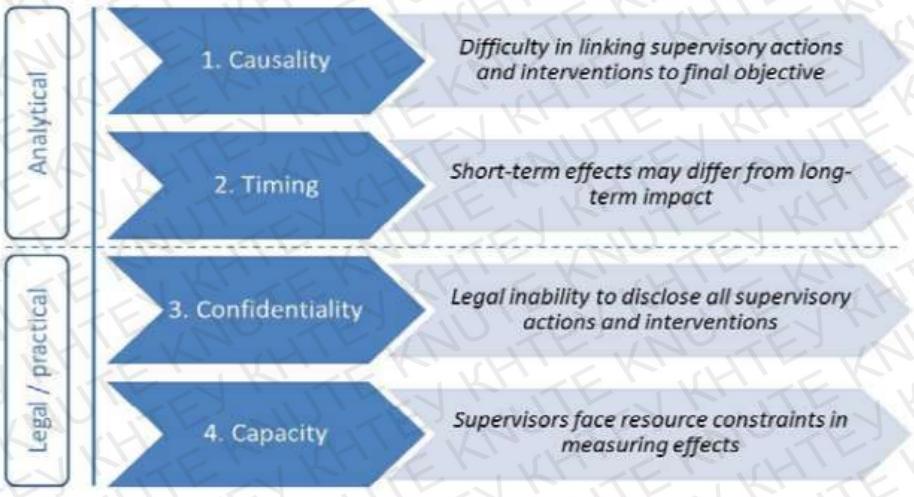


Figure 3.8 Challenges in measuring effects of financial supervision [63]

As a result, we have developed a system of indicators (Annex D) that can be used to build an algorithm model for financial supervision at banks based on a risk-oriented approach. In our view, when used in stress scenarios, tsunami will reflect the most of the bank situation and help identify the months that need to be corrected.

Using all the tools of analyses and control of the bank and the borrower individually, you can create an automated response system. If at least one of these parameters does not meet the regulatory requirements, a deep analysis will be conducted. The main idea of the algorithm is that you can save time on constant analysis and control and relevant indicators. And even when the system poses a threat, it will persons' task to work out why the system has issued a threat.

Finally, financial risk-oriented banking supervision, by its economic nature, is a comprehensive method of banking supervisory tools' application to identify high-risk areas in banking activities. Within this is expected an establishment of rules and algorithms by prudential banking supervisor to manage the banking risks. Thus, the monitoring of risk-management systems of banks is realized in order to obtain data on the level of compliance with the requirements that are set by the supervisor. Namely, whether a bank does not assume an excessive risk and whether the requirements of bank's stability have complied in order to ensure the reliability and stability of the banking system of the country.

CONCLUSIONS

The final qualification work considered financial supervision based on a risk-oriented approach.

According to the research conducted in the work, we can draw the following conclusions.

1. Under a compliance-based approach, supervisory activities focus on the financial situation of the supervised entities at a given point in time. RBS, on the contrary, is a dynamic process where the emphasis is more on understanding and anticipating the possible risks the supervised entity will be facing when executing its business plan thus going beyond its current financial situation. In a sense, RBS can be said to be more preventative. There is a greater degree of flexibility generally in RBS. Compliance relies on rules which must observe, while under RBS the authority is more focused on principles. Because RBS is forward-looking, the starting point for supervisors is the business strategy of the institution. In looking at an institution's business strategy, supervisors need to understand the economy, the market and the activities of the institution's competitors and the risks arising from these factors on the institution.

2. The main practical aspect of financial supervision in banks based on Risk-based supervision is to focus on the future or forward-looking research. Compliance generally does not take these factors into consideration because it is based on rules for the entire industry or by pattern and not the risks of the individual institutions or the content of the activity. Where an institution is looking to expand its business lines, RBS may impose a requirement for additional capital to support the lines on an institution that has not done an appropriate analysis of the market, the competition and the risks and has not taken measures to mitigate those risks. The central tenet of RBS is the relationship between risks and capital—the higher the risk profile of the financial

institution, the higher the capital it must hold. RBS requires supervisors to be satisfied that institutions are complying with their own formal risk management practices. In doing so, supervisors under RBS must have a holistic view of the institution and understand the relationships between the risks.

3. The problem of having non-performing assets that impede the resumption of lending is typical not for one or more banks, but for the banking system of Ukraine as a whole. Solving the problem of accumulating excessive volumes of problem assets in the banking sector of Ukraine requires a comprehensive approach focused on the phased implementation of measures in the following main areas: simplifying the procedures for writing off and selling bad debt, collecting and selling collateral, using the securitization mechanism; improving the regulatory and methodological support for determining the real volumes and monitoring of bad debts; the use of the necessary tools to detoxify assets. The credit portfolio in the banking system of Ukraine still has a very high level of credit risk. For today, the regulator's primary task is to reduce the proportion of non-performing loans in the total portfolio. Although the National Bank of Ukraine has provided some tools to mitigate this risk as debt restructuring, most troubled borrowers have not yet taken advantage of it. However, we have a 3% reduction in the economic standard of maximum credit risk per H7 counterparty; reducing the standard of high credit risks H8 more than 3 times; reducing the H9 maximum credit risk ratio by 35% annually.

4. The volatility of the financial and economic environment in the country creates the need to develop a set of effective debt management instruments, both individual banks and of the entire banking system as a whole. Analysis of current trends in the development of the banking system of Ukraine shows that the volume of lending is constantly increasing in both absolute and relative terms. At the same time, the share of bad debts in banks' loan portfolios, especially on mortgage loans, is increasing. It is important not only to reduce the share of problem loans in the structure of the loan

portfolio but also to prevent their occurrence in the future to ensure the financial stability of the bank and the confidence in the banking system by the public.

5. Since 2019, Ukraine has begun the process of introducing a new approach to banking supervision - SREP (Supervisory review and evaluation process). The effects of introducing SREP banks' valuation are: consolidation of actions of all subdivisions of the prudential block is ensured for defining a unified banking supervision strategy; improved efficiency of the use of supervisory resources by applying the principle of proportionality in determining the volume, frequency and supervision of banks, depending on their level of risk and systemic impact, the banks of Ukraine have been evaluated taking into account the approaches used in the countries of the European Union, which makes it possible to compare Ukrainian banks with banks of other countries in terms of their viability; increased supervisory response in the early stages of identifying bank risks. Systematic analysis and evaluation of the bank's business model were carried out with the help of SREP, which included assessing the viability of the business model and determining the sustainability of its development strategy, its corporate governance, and assessing capital and liquidity risks. Changing approaches to banking supervision will enhance the effectiveness of supervision, make changes to field supervision in the form of inspections, which in turn will depend on the size of the bank (its value to the system) and the risks of the institution.

6. Ukraine is moving towards the adoption of SPLIT. In particular, the National Bank will become the regulator of insurance, leasing, financial companies, credit unions, pawnshops and credit bureaus, and the NCSSMC will regulate non-state pension funds and construction financing funds. Therefore, we can assume that Ukraine is in a group of countries with an integrated approach The integrated approach is one in which a single universal regulator conducts both safety and soundness oversight and conduct-of-business regulation for all sectors of financial services business. The existence of multiple supervisors can lead to difficulties in holding the regulators to account for their performance, as overlapping responsibilities make it

possible to blame the other supervisor for one’s own failures, thus making it difficult to hold any of the supervisors responsible. In the short and medium-term, the following more basic measures should be taken to improve prudential supervision: facilitate the exchange of information between the supervisors (institutionalised regular meetings, sharing of harmonised information) to improve the ability to supervise financial conglomerates; improve supervision capacity by steply integration.

7. The algorithm for conducting financial supervision in banks based RBA was generated. Using all the tools to analyze and control the readings wich use in this work and not only, both in the bank and the borrower individually, you can create an automated response system. If at least one of these parameters does not meet the regulatory requirements, a deep analysis will be conducted on the risk of the impact of this situation on the Bank's activities. The main idea of the algorithm is that you can save time on constant analysis and control and so relevant indicators. And even when the system poses a threat, then it will already be a human activity to work out why the system has issued a threat.

8.

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APPENDICES

Appendix A

Basel Core Principles for Effective Banking Supervision

№	Characteristic
Objectives, Autonomy, Powers, and Resources	
– CP 1.1	deals with the definition of responsibilities and objectives for the supervisory agency.
– CP 1.2	deals with skills, resources, and independence of the supervisory agency.
– CP 1.3	deals with the legal framework.
– CP 1.4	deals with enforcement powers.
– CP 1.5	requires adequate legal protection for supervisors.
– CP 1.6	deals with information sharing.
Licensing and Structure	
– CP 2	deals with permissible activities of banks.
– CP 3	deals with licensing criteria and the licensing process.
– CP 4	requires supervisors to review—and have the power to reject—significant transfers of ownership in banks.
– CP 5	requires supervisors to review major acquisitions and investments by banks. • Prudential Regulations and Requirements
Prudential Regulations and Requirements	
– CP 6	deals with minimum capital adequacy requirements. For internationally active banks, the requirements must not be less stringent than those in the Basel Capital Accord.
– CP 7	deals with the granting and managing of loans and the making of investments.
– CP 8	sets out requirements for evaluating asset quality and the adequacy of loan–loss provisions and reserves
– CP 9	sets forth rules for identifying and limiting concentrations of exposures to single borrowers or to groups of related borrowers.
– CP 10	sets out rules for lending to connected or related parties.

– CP 11	requires banks to have policies for identifying and managing country and transfer risks.
– CP 12	requires banks to have systems to measure, monitor, and control market risks.
– CP 13	requires banks to have systems to measure, monitor, and control all other material risks.
– CP 14	calls for banks to have adequate internal control systems.
– CP 15	sets out rules for the prevention of fraud and money laundering. • Methods of Ongoing Supervision
Methods of Ongoing Supervision	
– CP 16	defines the overall framework for onsite and offsite supervision.
– CP 17	requires supervisors to have regular contacts with bank management and staff and to fully understand banks' operations.
– CP 18	sets out the requirements for offsite supervision.
– CP 19	requires supervisors to conduct onsite examinations or to use external auditors for validation of supervisory information.
– CP 20	requires the conduct of consolidated supervision. • Information Requirements
Information Requirements	
– CP 21	requires banks to maintain adequate records reflecting the true condition of the bank and to publish audited financial statements. • Remedial Measures and Exit
Remedial Measures and Exit	
– CP 22	requires the supervisor to have—and promptly apply—adequate remedial measures for banks when they do not meet prudential requirements or when they are otherwise threatened. • Cross-Border Banking.
Cross-Border Banking	
– CP 23	requires supervisors to apply global consolidated supervision over internationally active banks.
– CP 24	requires supervisors to establish contact and information exchange with other supervisors involved in international operations, such as host country authorities.
– CP 25	requires (a) that local operations of foreign banks are conducted to standards similar to those required of local banks and (b) that the supervisor has the power to share information with the home-country supervisory authority

The Basel Core Principles (CP) comprise 25 basic principles that need to be in place for a supervisory system to be effective. CP 1 is divided into six parts. Source: BCBS (1999).[52]

APPENDIX B

Visualize the detection of non-compliant NBU standards from 2016 till 2018

Банк	Н1, Регулятивний капітал, тис. грн	Н2, Норматив достатності (адекватності) регулятивного капіталу (не менше 10 %)	Н4, Норматив миттєвої ліквідності (не менше 20 %)	Н5, Норматив поточної ліквідності (не менше 40 %)	Н6, Норматив коротко-строкової ліквідності (не менше 60 %)	Н7, Норматив максимального розміру кредитного ризику на одного контрагента (не більше 25 %)	Н8, Норматив великих кредитних ризиків (не більше 8-кратного розміру регулятивного капіталу)	Н9, Норматив максимального розміру кредитного ризику за операціями з пов'язаними з банком особами (не більше 25 %)	Н11, Норматив інвестування в цінні папери окремо за кожною установою (не більше 15 %)	Н12, Норматив загальної суми інвестування (не більше 60 %)	Л13-1, Норматив ризику загальної довгої відкритої валютної позиції (не більше 1%)	Л13-2, Норматив ризику загальної короткої відкритої валютної позиції (не більше 10%)
2	3	4	5	6	7	8	9	10	11	12	13	14
2 АТ "Укрексімбанк"	10 997 754	14,46	82,32	138,49	141,67	27,81	99,31	0,07	0,03	0,22	0,3597	35,2418
3 ПАТ "Промінвестбанк"	3 934 127	18,21	93,31	74,12	84,91	53,79	246,10	1,19	0,00	0,00	140,8509	0,1547
5 ПАТ "УКРСОЦБАНК"	2 310 468	11,89	58,77	50,18	44,23	49,08	189,88	0,81	0,04	0,07	0,1809	4,4168
6 АТ "ОЩАДБАНК"	13 001 054	17,52	52,56	133,22	97,08	22,31	404,79	0,81	0,05	0,14	0,2995	179,9781
29 ПАТ "БАНК АЛЬЯНС"	291 791	17,91	91,32	104,09	74,86	23,66	262,88	1,00	0,00	0,00	0,4307	8,1145
36 АТ "Райффайзен Банк Аваль"	10 053 046	20,64	44,67	59,08	88,00	11,20	11,20	2,27	0,80	0,84	0,4328	0,1026
42 ПАТ "ВТБ БАНК"	927 113	8,18	72,12	31,61	28,41	70,04	374,67	6,32	0,01	0,01	0,5514	162,7212
43 АТ "АЛЬТБАНК"	218 184	147,18	302,33	201,08	181,21	18,34	35,51	0,04	0,00	0,01	0,3789	0,0856
46 ПАТ КБ "ПРИВАТБАНК"	22 275 400	20,06	37,41	153,98	97,54	4,52	0,00	0,67	0,20	0,21	174,2036	35,6962
49 Полікомбанк	212 186	49,67	127,52	92,56	118,09	15,79	81,48	65,69	0,72	1,60	0,1968	1,8038
62 АТ "ТАСКОМБАНК"	1 290 638	11,81	85,96	68,11	80,74	19,39	346,44	10,05	0,00	0,00	0,6141	1,5256
72 ПАТ "БАНК ФАМІЛЬНИЙ"	212 712	192,27	230,96	359,32	331,09	5,97	0,00	6,01	0,00	0,00	0,0653	0,0970
88 ПАТ "КРЕДОБАНК"	1 477 190	15,97	26,88	46,10	68,10	4,92	0,00	0,41	0,00	0,00	0,4998	0,8773
91 ПАТ АКБ "Львів"	203 798	15,40	159,50	67,29	80,78	27,15	225,74	18,35	0,00	0,00	0,4842	0,0000
95 ПАТ "ОКСІ БАНК"	203 555	51,43	146,49	119,92	88,37	19,18	66,49	13,45	0,00	0,00	0,1915	0,0756
96 ПАТ "А - БАНК"	556 119	16,24	161,43	82,81	73,25	9,48	9,48	0,13	0,00	0,00	0,2043	0,5689
97 ПАТ "ВіЕс Банк"	953 812	51,25	167,47	104,95	127,32	16,18	39,11	10,09	0,00	0,00	0,7322	1,0610
101 АКБ "ІНДУСТРІАЛБАНК"	983 891	38,80	140,60	106,62	105,34	51,36	155,83	18,15	0,93	1,28	16,9845	0,0191
105 ПАТ "МАРФІН БАНК"	241 821	12,03	51,35	85,34	83,70	25,65	173,31	9,14	0,54	0,80	0,1278	6,5006
106 Акціонерний банк"Південний"	2 147 592	10,69	56,49	57,37	86,15	33,46	466,93	40,65	0,34	0,54	0,2197	5,4727
113 ПАТ "Полтава-банк"	486 938	33,39	95,99	99,06	79,00	20,59	99,65	30,33	2,06	2,36	0,5712	0,0000
115 ПАТ "ПУМБ"	3 632 735	12,44	61,71	86,47	97,80	173,81	323,60	173,81	0,17	0,21	0,5964	1,4454
123 ПАТ "БАНК "ГРАНТ"	545 181	52,14	70,85	68,82	123,26	16,65	61,39	19,13	0,39	0,70	0,5350	0,0000
126 ПАТ "МЕГАБАНК", Харків	658 747	8,18	72,36	75,72	83,79	23,55	715,65	464,31	0,23	0,37	0,3021	1,7697
128 ПАТ "СКАЙ БАНК"	205 023	57,91	59,29	46,52	66,66	15,67	27,19	0,01	0,00	0,00	0,2460	5,6142
129 ПАТ "БТА Банк"	220 155	62,35	163,25	232,33	157,75	7,77	0,00	7,80	0,08	0,24	0,6002	0,3108
133 ПАТ "АСВІО БАНК"	412 143	54,79	183,87	72,73	104,75	20,51	132,62	110,92	0,00	0,00	0,5250	0,0000
136 АТ "УкрСиббанк"	6 345 343	26,41	52,81	81,16	120,37	24,99	164,45	15,44	4,21	5,23	0,3265	2,7012
142 ПАТ "Ідея Банк"	399 592	13,35	89,41	98,52	174,61	12,06	12,06	0,34	0,02	0,02	0,3236	0,2084
143 ПАТ "КОМІНВЕСТБАНК"	265 456	20,77	44,70	57,33	84,94	20,17	127,36	37,69	0,00	0,00	0,2427	0,2879
146 ПАТ"БАНК "УКРАЇН.КАПІТАЛ"	200 807	33,87	87,23	117,55	96,59	22,76	145,64	51,42	0,00	0,00	0,4893	0,0000
153 ПАТКБ "ПРАВЕКС-БАНК"	1 769 903	133,83	138,99	145,79	146,19	12,66	12,66	12,71	0,00	0,00	0,4804	0,1842
171 ПАТ "КРЕДІ АГРІКОЛЬ БАНК"	3 723 925	18,74	72,99	73,42	94,10	18,13	78,33	0,86	0,07	0,07	0,0484	0,2864
191 ПАТ АКБ "АРКАДА"	529 512	26,36	159,84	125,47	89,14	10,47	10,47	8,61	10,02	10,04	0,6155	0,0000
205 АТ "МетаБанк"	239 219	53,34	91,20	141,38	136,71	22,63	95,83	0,76	0,00	0,00	0,1251	0,4606
206 АТ "Місто Банк"	204 070	11,78	31,71	43,00	63,43	41,67	327,93	188,84	0,00	0,00	0,4166	0,0732
231 ПАТ "ЮНЕКС БАНК" м. Київ	256 248	55,87	131,98	124,92	121,85	14,45	124,34	109,89	0,00	0,00	0,6632	1,2411
240 АТ "КІБ"	202 346	55,92	167,55	163,30	111,87	23,47	64,72	0,36	0,03	0,03	0,3239	0,0000
241 ПАТ "АЙБОКС БАНК"	205 431	23,65	90,59	159,07	115,48	22,44	245,64	48,58	0,03	0,03	0,2067	0,0000
242 ПАТ "УНІВЕРСАЛ БАНК"	522 899	17,73	112,74	119,40	90,78	17,22	94,89	16,29	0,00	0,00	0,0468	2,5248
243 ПАТ "КБ "ЗЕМЕЛЬНИЙ КАПІТАЛ"	212 153	50,43	252,82	114,24	97,91	22,09	132,89	18,00	0,00	0,00	0,7125	0,0000
251 АТ "ПІРЕУС БАНК МКБ"	522 922	33,22	76,47	98,00	105,67	15,46	127,05	0,13	0,00	0,00	0,4182	0,4858
270 ПАТ "БАНК КРЕДИТ ДНІПРО"	789 040	11,07	51,07	51,72	58,53	42,61	311,45	10,02	0,01	0,02	92,2407	1,1907
272 ПАТ "АЛЬФА-БАНК"	4 401 709	11,45	57,84	77,29	75,43	42,87	362,92	9,71	0,00	0,00	51,7394	7,5406
274 АБ "УКРГАЗБАНК"	5 314 276	13,38	53,86	99,19	82,70	19,55	362,24	0,30	0,45	0,55	0,0719	3,5933
286 ПАТ "АБ "РАДАБАНК"	264 047	34,40	58,97	79,29	100,25	16,37	93,97	7,66	0,00	0,00	0,9160	1,1986
288 АБ "КЛІРИНГОВИЙ ДІМ"	335 420	26,07	85,00	83,43	80,05	23,43	107,86	74,68	0,00	0,00	0,3867	0,5812
290 "ПЕРШИЙ ІНВЕСТИЦІЙНИЙ БАНК"	291 796	36,48	84,34	97,38	88,68	64,34	196,96	196,96	0,04	0,04	0,6096	0,0442
295 ПАТ "ІНГ Банк Україна"	3 459 478	98,19	85,15	139,92	138,36	21,60	50,66	21,64	0,01	0,01	0,0747	1,8903
296 АТ "ОТП БАНК"	3 642 415	16,85	48,41	68,46	91,65	23,31	60,04	22,78	0,02	0,02	0,4415	0,6673
297 ПАТ "СІТІБАНК"	1 441 212	28,42	71,62	107,49	108,85	22,14	109,59	2,33	0,00	0,00	0,0393	1,0847
298 АТ "ПРОКРЕДИТ БАНК"	2 034 930	14,98	45,28	48,64	78,77	12,11	22,69	0,04	0,05	0,07	0,5649	0,0182
299 ПАТ "СБЕРБАНК"	4 975 661	13,67	360,22	47,36	84,13	61,15	358,24	0,04	0,00	0,00	26,0189	0,7718
305 ПАТ "БАНК ВОСТОК"	675 584	12,10	65,35	67,35	101,88	23,16	442,05	12,61	0,00	0,00	0,4404	4,9819
311 ПАТ "АКБ "Траст-капітал"	235 258	92,42	149,30	133,99	114,07	13,23	30,29	30,29	0,00	0,00	0,2447	0,2737
313 Укр.банк реконстр.та розв.	216 483	371,37	17 596,90	69 298,89	69 298,89	0,02	0,00	0,00	0,00	0,00	0,2214	0,0000
317 ПАТ КБ"ФІНАНСОВА ІНІЦІАТИВА" *	-7 572 025	0,00	9,22	15,43	15,38	47 904 279 508,00	1 010 906 527 038,00	0,00	0,00	0,00	129 828 462,0000	83 456 941 948,0000
320 БАНК ІНВЕСТ. ТА ЗАОЩАДЖЕНЬ	525 158	18,77	113,01	120,32	99,14	22,80	330,50	283,11	0,16	0,16	0,2794	3,1074
321 АТ "БМ БАНК"	201 848	25,73	315,87	249,70	96,96	24,26	102,09	23,99	0,00	0,00	0,5691	8,3747
325 ПАТ "БАНК ФОРВАРД"	-229 216	0,00	203,05	107,44	67,28	1 890 880 142,00	90 499 336 026,00	3 902 918,00	0,00	0,00	3 344 677,0000	275 481 317,0000
326 ПАТ "АКБ "КОНКОРД"	200 550	34,90	100,35	92,35	93,13	22,73	126,51	8,28	0,00	0,00	0,3057	0,0515
329 ПАТ "КРЕДИТ ЄВРОПА БАНК"	465 550	168,74	363,35	241,66	405,73	10,67	19,67	0,10	0,00	0,00	0,0644	1,6293
331 ПАТ "КРЕДИТВЕСТ БАНК"	366 862	33,62	134,80	117,41	190,27	22,22	217,94	0,00	0,00	0,00	0,6801	0,0000
377 АТ "УКРБУДІНВЕСТБАНК"	202 666	22,89	89,67	84,56	80,80	22,89	154,03	6,74	0,00	0,00	0,1335	0,0286
381 ПАТ "МОТОР-БАНК"	281 828	59,58	110,98	92,17	109,52	11,38	32,76	0,04	3,94	7,45	0,2954	0,2586
386 ПАТ "КБ "ГЛОБУС"	241 216	10,37	89,59	65,44	61,62	19,26	175,35	1,46	0,00	0,00	0,3848	9,1110
387 ПАТ "АП БАНК"	341 989	123,59	193,70	176,27	237,42	4,73	0,00	0,00	0,00	0,00	0,6910	0,0000
389 ПАТ "МІБ"	409 339	15,64	204,32	87,71	96,67	24,44	334,98	148,63	2,88	2,88	0,5401	1,3081
392 ПуАТ "КБ "АКОРДБАНК"	174 189	45,09	143,59	103,06	88,15	69,34	112,71	79,42	0,03	0,03	0,3511	0,7790
394 ПАТ "БАНК 3/4"	517 179	49,56	80,55	349,02	310,58	15,47	28,43	0,12	0,00	0,00	0,4995	4,3923
395 ПАТ "СВРОПРОМБАНК"	310 819	80,29	112,50	182,98	163,10	14,64	82,32	82,32	0,00	0,00	0,6701	6,9616
402 ПАТ "ВЕРНУМ БАНК"	202 639	56,19	150,25	174,81	150,73	12,11	100,63	88,52	0,00	0,00	0,2619	0,5613
407 ПАТ "Дойче Банк ДБУ"	359 543	96,40	144,26	129,59	118,63	21,49	84,86	3,83	0,00	0,00	0,0200	0,0837
430 ПАТ КБ "Центр"	205 085	104,51	474,82	548,61	313,41	14,07	26,83	0,89	0,00	0,00	0,2680	0,0011
455 ПАТ"СЕБ КОРПОРАТИВНИЙ БАНК"	471 790	564,77	104,37	158,60	143,13	1,20	0,00	0,00	0,00	0,00	0,6047	0,0126
460 ПАТ "БАНК СІЧ"	200 241	42,16	45,91	90,30	96,01	20,03	115,74	16,55	0,00	0,00	0,1548	0,4569
463 ПАТ "ДІВІ БАНК"	220 368	35,57	62,35	366,53	402,27	24,91	73,65	24,95	0,00	0,00	0,2789	5,2758
512 ПАТ "АЛЬПАРІ БАНК"	201 441	1 197,63	3 632,41	6 269,14	6 450,25	3,29	0,00	0,00	0,00	0,00	0,4925	0,0000
513 ПАТ "БАНК "ЮНІСОН" *	219 634	59,47	168,39	180,28	178,27	28,31	94,92	0,00	0,00	0,00	0,0173	6,5268
553 ПАТ "БАНК АВАНГАРД"	309 378	75,06	49,65	101,77	100,45	15,86	15,86	3,19	0,00	0,00	0,3241	0,7197
593 ПАТ "РОЗРАХУНКОВИЙ ЦЕНТР"	213 383	232,37	3 172,97	124,54	124,54	0,30	0,00	0,00	0,00	0,00	0,1640	0,0000
634 ПАТ "БАНК "ПОРТАЛ"	206 301	152,80	550,93	563,17	641,44	14,64	26,01	0,69	0,00	0,00	0,5035	1,7665
694 ПАТ "КРИСТАЛБАНК"	222 805	47,74	101,36	104,77	98,05	22,46	64,01	0,04	0,00	0,00	0,3682	0,1707
774 ПАТ "РВС БАНК"	222 464	45,29	125,72	95,66	73,41	21,52	21,52	0,01	0,00	0,00	0,0833	8,1805

Continuation of Annex B

Банк	Н1, Регулятивний капітал, тис грн.	Н2, Норматив достатності (адекватності) регулятивного капіталу (не менше 10 %)	Н3, Норматив достатності основного капіталу (не менше 7 %)	Н6, Норматив коротко-строкової ліквідності (не менше 60 %)	Н7, Норматив максимального розміру кредитного ризику на одного контрагента (не більше 25 %)	Н8, Норматив великих кредитних ризиків (не більше 8-кратного розміру регулятивного капіталу)	Н9, Норматив максимального розміру кредитного ризику за операціями з пов'язаними з банком особами (не більше 25 %)	Н11, Норматив інвестування в цінні папери окремо за кожною установою (не більше 15 %)	Н12, Норматив загальної суми інвестування (не більше 60 %)	Л13-1, Норматив ризику загальної довгої відкритої валютної позиції (не більше 5%)	Л13-2, Норматив ризику загальної короткої відкритої валютної позиції (не більше 5 %)	LCRвв, Норматив коефіцієнта покриття ліквідністю за всіма валютами (не менше 90 %)	LCRів, Норматив коефіцієнта покриття ліквідністю в іноземній валюті (не менше 90 %)
2	3	4	5	6	7	8	9	10	11	12	13	14	15
АТ "Укрексімбанк"	11 837 177	15,53	9,53	115,70	25,49	324,06	0,49	0,03	0,22	3,8907	0,3625	521,22	352,37
ПАТ "Промінвестбанк"	2 855 454	31,51	21,42	483,63	39,16	128,78	0,40	0,00	0,00	78,2380	54,8485	510,40	2 137,42
АТ "УКРСОЦБАНК"	1 626 561	16,84	16,59	84,20	23,79	117,81	0,14	0,04	0,07	0,6626	3,4132	179,35	246,18
АТ "Ощадбанк"	12 196 281	12,94	9,43	82,84	23,05	328,47	0,59	0,05	0,14	169,4165	0,0119	311,30	146,57
АТ "БАНК АЛЬЯНС"	378 899	11,07	8,37	72,31	22,38	425,14	18,68	0,00	0,00	3,4863	0,0000	135,44	183,30
АТ "Райффайзен Банк Аваль"	10 053 339	17,92	11,92	77,89	9,58	9,58	0,89	0,80	0,84	0,2478	0,9249	192,82	262,06
АТ "АЛЬТБАНК"	226 627	75,02	72,42	130,39	15,15	55,39	14,69	0,00	0,01	1,8249	0,1811	751,48	211,30
АТ КБ "ПриватБанк"	19 605 130	14,38	7,24	96,99	5,71	0,00	0,49	0,06	0,07	247,0333	0,3197	208,92	162,97
Полікомбанк	203 514	37,47	36,75	111,52	24,95	112,38	26,49	0,72	1,45	2,3321	0,1769	159,99	765,92
АТ "ТАСКОМБАНК"	2 242 140	16,02	9,11	68,99	17,19	170,96	10,66	0,00	0,00	3,9616	0,0001	124,98	179,17
ПрАТ "БАНК ФАМІЛЬНИЙ"	213 734	444,86	319,58	562,67	0,55	0,00	0,03	0,00	0,00	0,6484	0,0000	757,84	172,41
АТ "КРЕДОБАНК"	1 905 179	14,85	13,56	69,36	4,84	0,00	0,38	0,00	0,00	2,2952	0,0021	108,46	94,30
АТ АКБ "Львів"	432 382	21,73	12,65	87,89	10,88	21,64	8,49	0,00	0,00	0,4885	0,0000	252,58	318,87
АТ "ОКСІ БАНК"	223 586	71,58	62,90	117,64	11,26	30,87	2,33	0,00	0,00	0,7093	0,0720	1 070,25	2 719,19
АТ "А - БАНК"	762 672	15,45	11,13	74,60	10,81	10,81	0,04	0,00	0,00	0,6343	0,4197	284,56	182,98
АКБ "ІНДУСТРІАЛБАНК"	912 141	39,16	39,16	107,35	45,49	115,98	15,62	0,93	1,28	16,7562	0,2954	237,42	129,32
ПАТ "МТБ БАНК"	630 410	17,53	15,60	86,48	19,36	64,79	5,63	0,37	0,55	2,2660	0,0000	225,99	241,23
Акціонерний банк "Південний"	2 386 614	12,10	10,09	83,13	16,29	310,55	8,01	0,34	0,52	0,4874	0,0707	161,57	327,31
АТ "Полтава-банк"	591 033	34,93	25,94	95,26	18,35	75,59	25,19	0,02	0,02	0,2466	0,0307	284,35	187,90
АТ "ПУМБ"	7 483 184	20,39	12,54	105,53	9,53	41,65	41,65	0,17	0,21	1,6126	0,0000	168,79	176,12
АТ "БАНК "ГРАНТ"	536 780	46,36	41,29	117,31	21,69	97,06	21,29	0,36	0,65	4,0939	0,0000	255,06	596,85
АТ "МЕГАБАНК"	1 000 735	11,78	7,89	87,49	24,44	299,36	114,28	0,03	0,11	0,7961	0,0000	104,04	235,36
АТ "СКАЙ БАНК"	203 376	44,84	29,09	122,75	19,66	52,46	0,02	0,00	0,00	4,7092	0,0000	218,75	434,04
АТ "БТА БАНК"	321 197	148,40	148,40	258,14	13,08	13,08	0,00	0,08	0,17	4,5722	0,1524	2 176,07	500,66
АТ "АСВІО БАНК"	444 697	66,85	63,12	109,50	16,98	57,49	24,98	0,00	0,00	4,0897	0,0000	157,12	938,14
АТ "УКРСИББАНК"	6 096 264	22,10	13,30	99,12	24,99	127,99	12,11	0,99	1,01	3,8340	0,0517	311,78	324,30
АТ "Ідея Банк"	877 521	19,48	10,40	238,61	5,61	0,00	0,05	0,02	0,02	0,2248	0,1713	366,89	383,44
АТ "КОМІНВЕСТБАНК"	201 043	19,85	19,56	64,40	19,80	124,96	9,69	0,00	0,00	0,0494	0,4543	97,99	148,89
ПАТ "БАНК "УКРАЇНСЬКИЙ КАПІТАЛ"	238 555	39,84	34,12	89,50	19,47	87,29	14,69	0,00	0,00	1,3358	0,0196	329,13	999,69
АТ "ПРАВЕКС БАНК"	1 654 458	94,24	90,07	144,01	19,07	33,25	19,13	0,00	0,00	1,2605	0,3614	537,01	531,81
АТ "КРЕДІ АГРІКОЛЬ БАНК"	4 851 568	16,57	10,99	90,21	19,02	83,76	0,60	0,07	0,07	1,1077	0,1360	159,15	175,32
АТ АКБ "АРКАДА"	456 072	23,59	20,68	81,94	11,00	27,01	16,01	10,02	10,04	0,5770	0,0000	166,73	1 095,25
АТ "МетаБанк"	286 730	52,73	38,48	138,87	24,46	128,59	0,25	0,00	0,00	4,2538	0,0001	262,02	290,68
АТ "Місто Банк"	204 431	15,36	10,93	60,07	32,19	103,15	19,95	0,00	0,00	3,7990	0,0000	112,71	379,27
АТ "ЮНЕКС БАНК"	203 550	67,15	67,15	128,16	5,00	37,52	37,52	0,00	0,00	3,3679	0,1622	455,55	281,05
АТ "КІБ"	220 828	21,09	19,26	80,86	23,06	212,55	3,58	0,03	0,03	0,1580	2,1467	264,99	528,49
АТ "АЙБОКС БАНК"	205 425	23,76	21,67	75,86	21,81	177,05	23,87	0,03	0,03	0,8522	0,0000	121,71	442,51
АТ "УНІВЕРСАЛ БАНК"	1 494 260	16,05	11,91	100,98	7,84	14,98	7,14	0,00	0,00	0,3811	2,2566	288,46	282,15
АТ "КБ "ЗЕМЕЛЬНИЙ КАПІТАЛ"	251 565	40,86	36,57	94,89	15,61	125,21	23,29	0,00	0,00	0,3562	0,2591	340,29	2 197,99
АТ "ПІРЕУС БАНК МКБ"	616 817	34,13	32,57	114,97	15,49	67,03	0,04	0,00	0,00	0,9074	0,0000	299,81	361,23
АТ "БАНК КРЕДИТ ДНІПРО"	788 839	12,59	11,31	64,66	30,75	184,80	0,44	0,01	0,01	3,8990	0,5906	132,71	392,80
АТ "АЛЬФА-БАНК"	6 290 234	14,52	10,64	74,76	20,06	147,41	7,62	0,00	0,00	2,7749	1,0518	347,95	276,60
АБ "УКРГАЗБАНК"	6 595 310	13,76	13,40	85,08	17,76	318,34	0,31	0,45	0,55	2,5789	0,0000	222,01	180,31
АТ "АБ "РАДАБАНК"	281 933	25,04	19,10	86,92	15,48	89,98	12,60	0,00	0,00	4,8546	0,6626	312,86	390,38
АБ "КЛІРИНГОВИЙ ДІМ"	527 143	37,45	32,52	89,15	16,71	63,65	22,92	0,00	0,00	0,1002	2,6254	146,05	199,97
АТ "ПЕРШИЙ ІНВЕСТИЦІЙНИЙ БАНК"	343 774	40,25	33,62	104,73	16,05	105,64	78,30	0,04	0,04	2,5635	0,0000	253,11	278,09
АТ "ІНГ Банк Україна"	3 564 409	74,50	37,25	132,12	17,93	33,38	0,01	0,00	0,00	0,0411	1,9790	431,54	224,97
АТ "ОТП БАНК"	6 611 083	20,81	15,70	99,85	22,07	30,63	22,32	2,25	2,27	2,7508	0,0301	171,04	192,62
АТ "СІТІБАНК"	1 870 032	44,01	22,01	106,62	13,87	42,42	0,31	0,00	0,00	0,0613	0,9370	249,88	264,31
АТ "ПРОКРЕДИТ БАНК"	3 609 305	20,88	17,24	96,75	6,44	0,00	0,11	0,03	0,05	2,8753	0,0000	170,11	256,80
АТ "СБЕРБАНК"	7 852 835	50,99	49,90	291,82	13,13	79,39	0,01	0,00	0,00	3,2562	0,0408	1 720,51	1 443,52
ПАТ "БАНК ВОСТОК"	949 040	12,90	8,81	91,33	18,55	252,28	2,24	0,00	0,00	3,9163	0,0000	112,97	137,84
АТ "БАНК ТРАСТ-КАПІТАЛ"	236 970	94,05	91,44	246,61	16,70	28,75	12,05	0,00	0,00	3,4679	0,0000	799,58	2 253,00
АТ "Український банк реконструкції та	215 821	337,23	295,30	1 861,19	0,02	0,00	0,00	0,00	0,00	0,7613	0,0000	6 112,71	99,80
АТ "БАНК ІНВЕСТИЦІЙ ТА	533 803	13,64	13,51	62,15	20,96	218,64	100,42	0,16	0,16	3,9635	0,1731	236,79	319,93
АТ "БАНК ФОРВАРД"	337 402	18,70	13,34	78,04	14,83	14,83	0,01	0,00	0,00	1,6613	0,0709	293,82	2 836,79
АТ "АКБ "КОНКОРД"	228 441	15,72	13,84	76,21	23,04	174,97	4,32	0,00	0,00	0,2905	0,8243	188,81	1 612,09
АТ "КРЕДИТ ЄВРОПА БАНК"	383 528	94,52	69,79	179,87	20,49	67,47	0,00	0,00	0,00	1,7326	0,0106	418,02	266,64
АТ "КРЕДИТВЕСТ БАНК"	404 286	30,81	29,13	146,62	19,52	183,30	0,01	0,00	0,00	0,6177	0,5761	261,42	361,04
АТ "УКРБУДІНВЕСТБАНК"	205 685	22,47	21,23	79,91	19,82	134,32	12,88	0,00	0,00	0,9155	3,8790	542,16	966,10
АТ "МОТОР-БАНК"	263 632	41,71	37,30	126,92	19,23	117,34	39,61	3,94	7,45	3,7394	0,0000	257,23	407,19
АТ "КБ "ГЛОБУС"	328 056	14,45	10,03	60,18	14,60	42,54	0,62	0,00	0,00	0,4747	3,3633	290,33	359,35
АТ "АП БАНК"	371 837	56,56	47,64	194,74	5,73	0,00	2,76	0,00	0,00	3,6948	0,0000	398,85	365,29
АТ "МІБ"	415 174	21,79	18,10	80,59	23,83	206,64	4,65	1,75	1,75	1,2445	0,4285	318,05	123,67
ПуАТ "КБ "АКОРДБАНК"	242 388	22,44	21,09	90,27	22,41	147,98	24,06	0,02	0,02	0,6553	3,3093	575,88	212,27
АТ "БАНК 3/4"	453 102	130,61	130,61	115,95	16,59	16,59	0,03	0,00	0,00	0,5922	0,8204	574,05	781,68
АТ "ЄПБ"	262 141	57,47	46,03	135,16	15,30	72,63	23,47	0,00	0,00	1,8138	3,6975	1 769,12	6 381,19
АТ "Дойче Банк ДБУ"	292 893	102,98	102,98	120,44	22,24	77,23	18,94	0,00	0,00	0,0491	0,0000	299,83	1 682,55
АТ "СЕБ КОРПОРАТИВНИЙ БАНК"	589 277	409,79	216,49	157,68	0,86	0,00	0,09	0,00	0,00	3,3689	0,0000	551,92	573,34
АТ "БАНК СІЧ"	216 671	17,20	15,89	70,84	21,40	105,18	6,27	0,00	0,00	3,4177	1,3581	238,46	383,89
АТ "АЛЬПАРІ БАНК"	205 850	212,05	212,05	293,60	5,82	0,00	0,25	0,00	0,00	1,2328	0,0000	3 621,09	5 893,38
АТ "БАНК АВАНГАРД"	331 450	104,47	97,40	77,08	7,43	0,00	2,90	0,00	0,00	1,8500	1,2891	377,34	150,69
ПАТ "РОЗРАХУНКОВИЙ ЦЕНТР"	257 778	294,48	275,98	388,95	0,15	0,00	0,00	0,00	0,00	0,0347	0,0013	373,60	179,64
АТ "БАНК "ПОРТАЛ"	215 701	101,60	95,58	165,92	23,68	70,76	12,87	0,00	0,00	4,5602	0,0000	482,49	864,32
АТ "КРИСТАЛБАНК"	261 402	38,50	38,50	93,64	20,46	65,91	1,01	0,00	0,00	1,4166	0,0641	199,38	220,56
АТ "РВС БАНК"	276 963	23,00	16,97	60,85	11,34	21,46	0,14	0,00	0,00	0,7294	0,1394	226,92	534,49

APPENDIX C

FIGURE 5. The Financial Services System Regulatory Structure, France

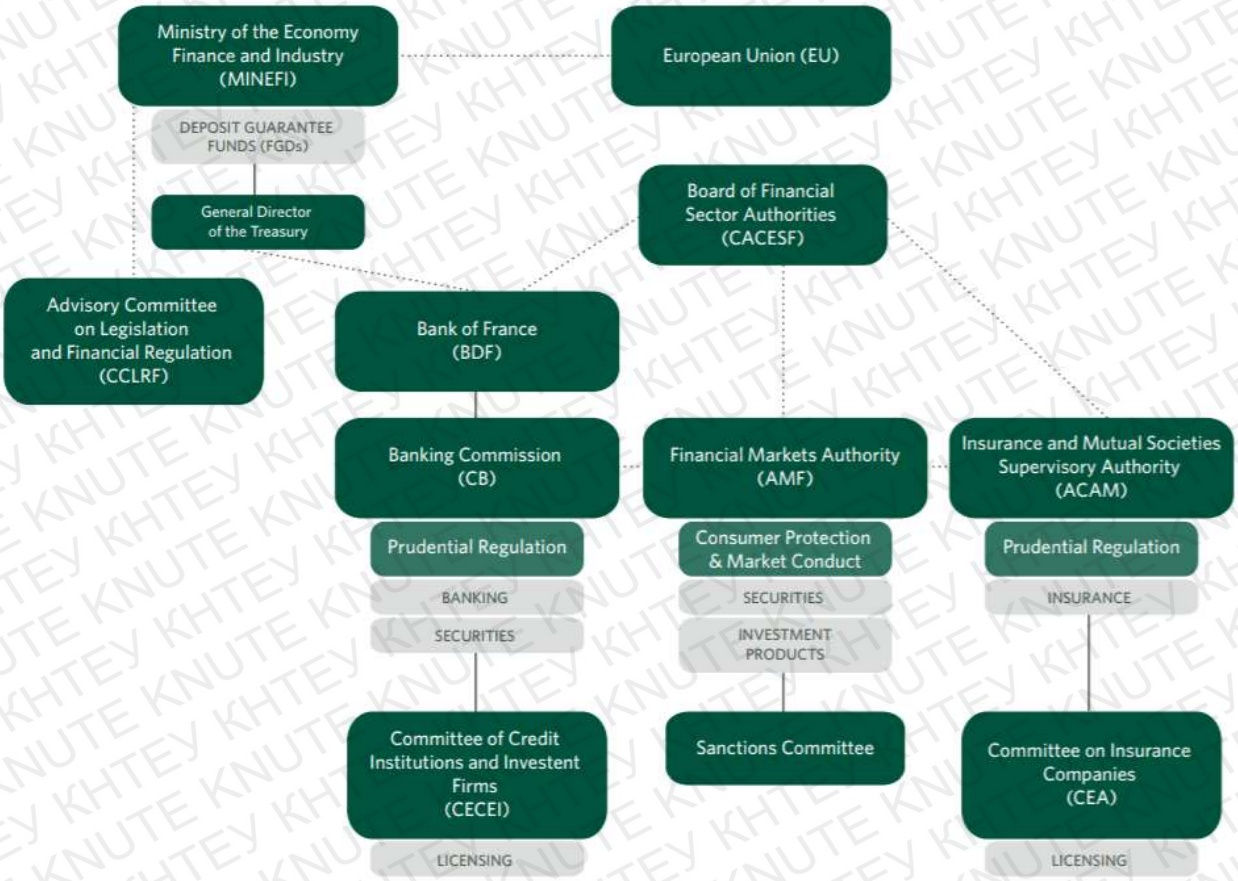
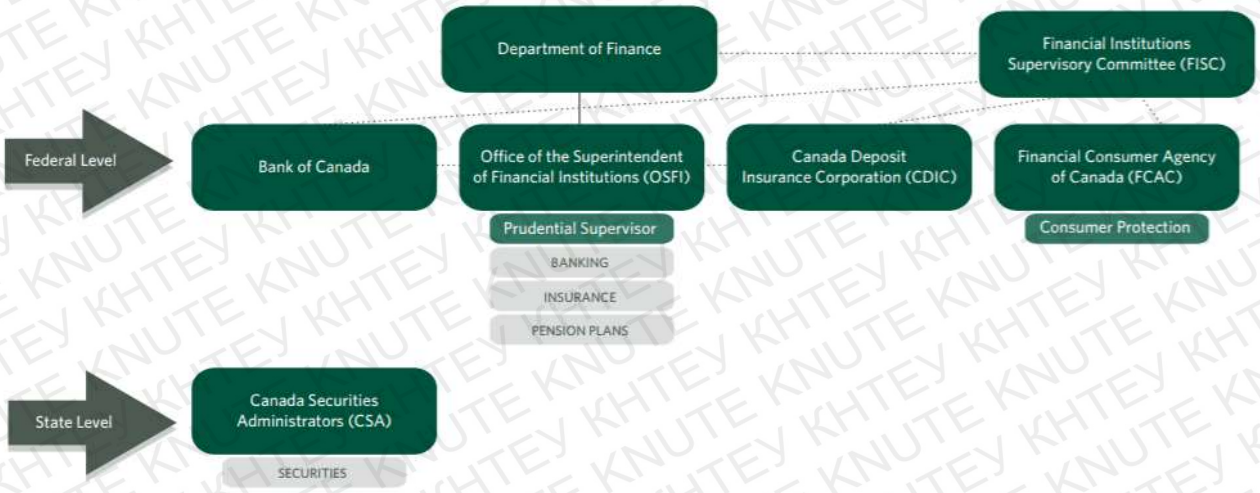
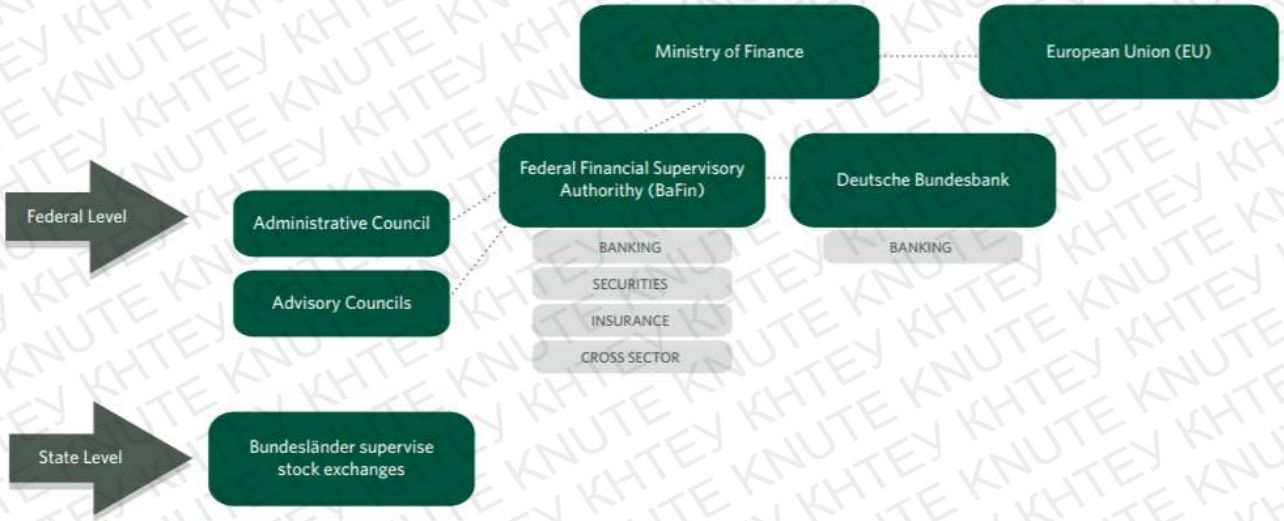


FIGURE 8. The Financial Services System Regulatory Structure, Canada



Note: Dotted lines indicate a cooperative relationship.

FIGURE 9. The Financial Services System Regulatory Structure, Germany

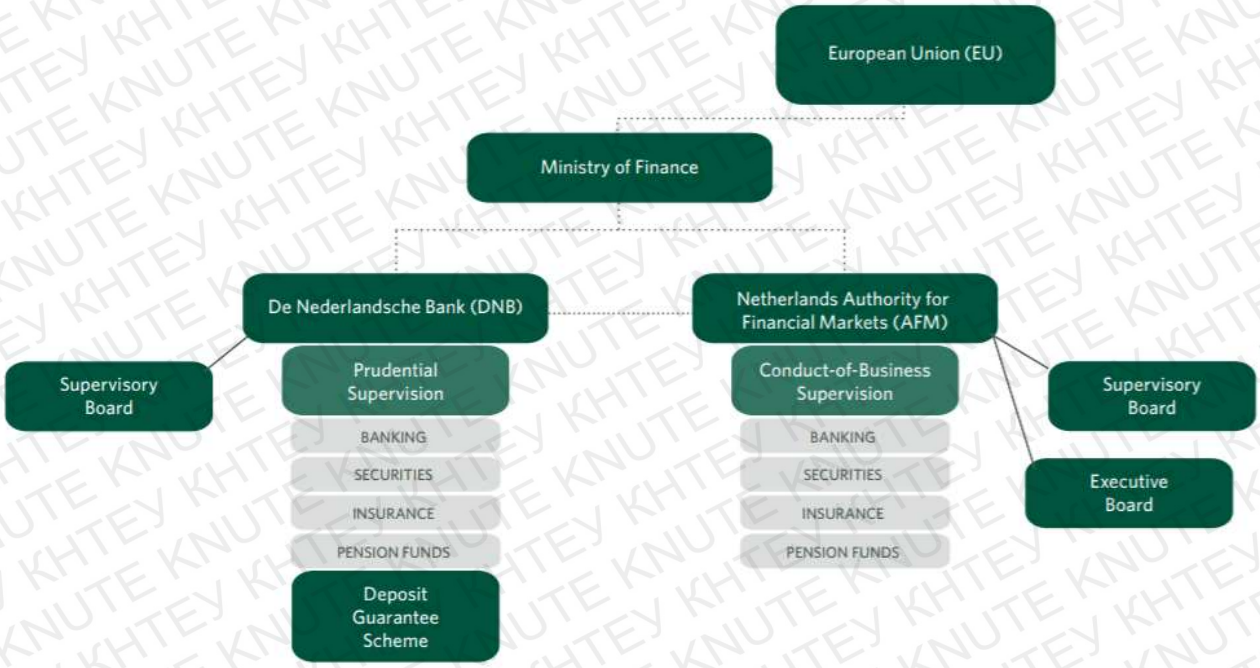


Note: Dotted lines indicate a cooperative relationship.

FIGURE 15. The Financial Services System Regulatory Structure, Australia

Note: Dotted lines indicate a cooperative relationship.

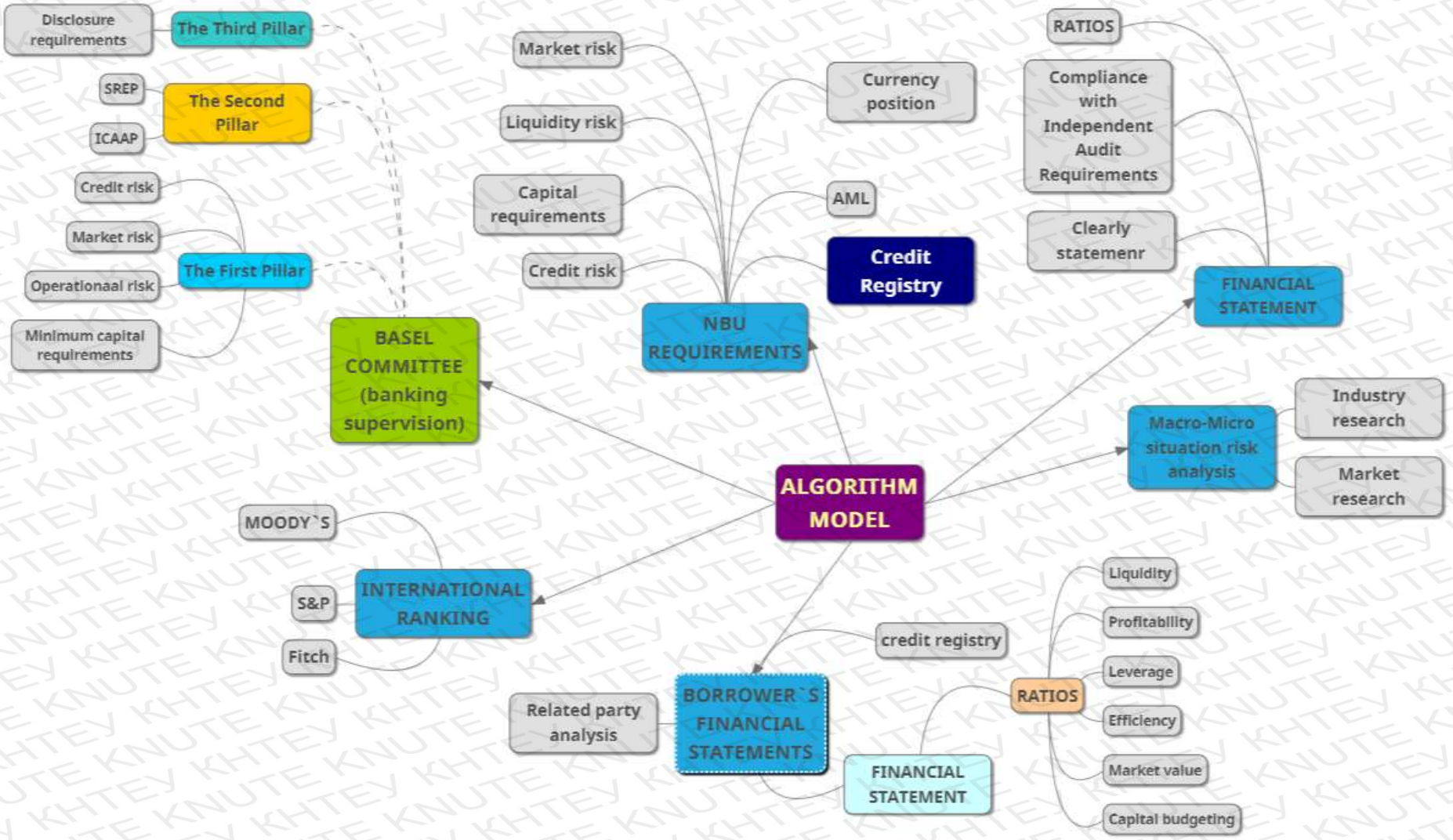
FIGURE 16. The Financial Services System Regulatory Structure, the Netherlands



Note: Dotted lines indicate a cooperative relationship.

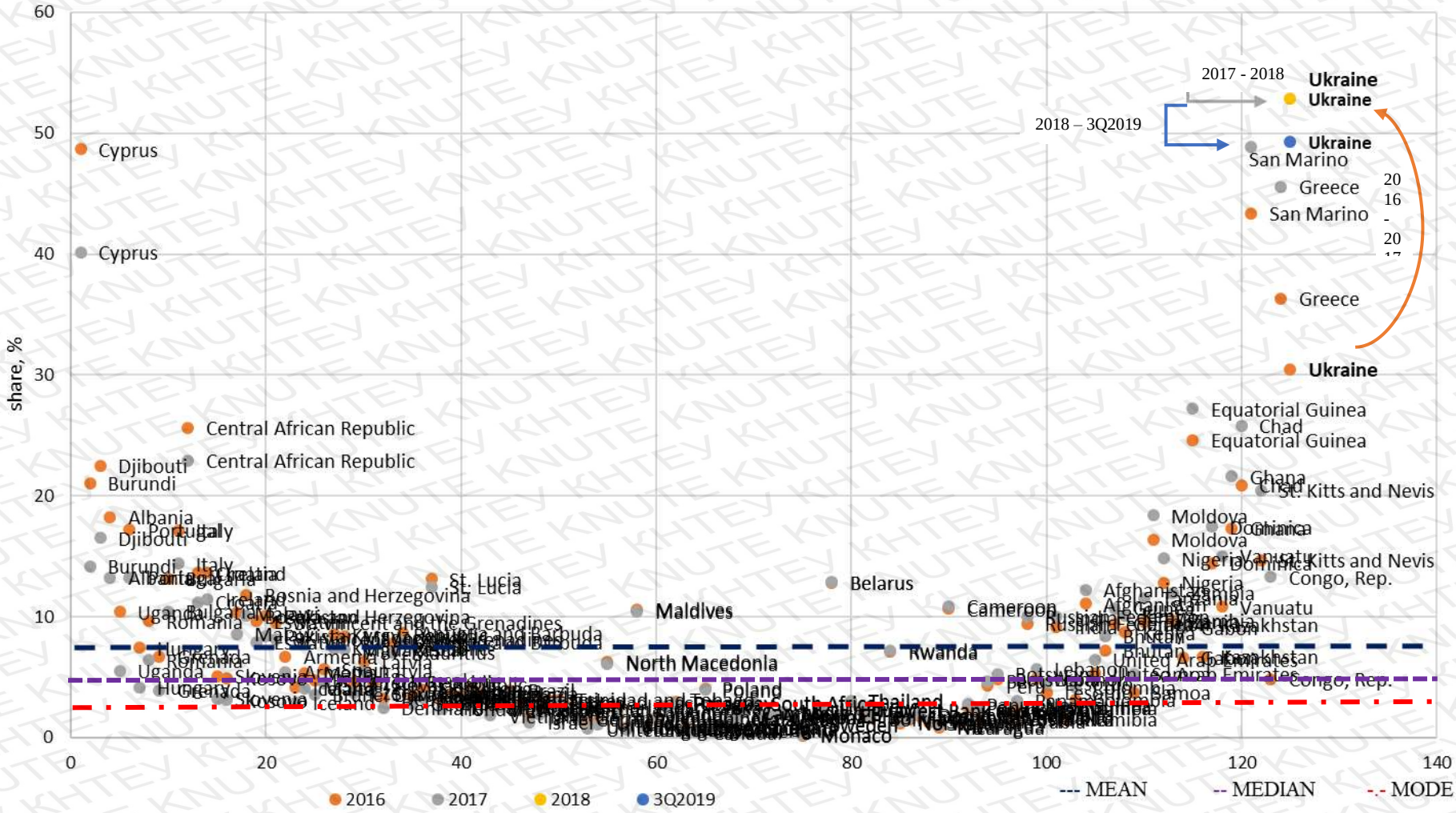
APPENDIX D

A set of tools to build a financial supervision algorithm based on risk-oriented approach



APPENDIX E

Bank nonperforming loans to total gross loans, 2016 – 3Q2019 (%)



Source: autor calculations based on [64]

APPENDIX F

NPL level forecasting by regression analysis

	$\bar{X}$=	1 126 949	$\bar{Y}$=	623600,8			
		x	y				
№		Credit exposure, mln. UAH	NPL, mln UAH.	x^2	y^2	x*y	K growth x
1	01.08.2017	1 020 015	591529,6	1 040 430 004 036	349907227704,9	603368857609,6	
2	01.09.2017	1 022 649	582248,8	1 045 810 012 471	339013699468,9	595435908615,9	1,0026
3	01.10.2017	1 042 276	588214,9	1 086 338 598 905	345996730399,1	613082052687,6	1,0192
4	01.11.2017	1 055 464	588465,9	1 114 004 427 170	346292157353,0	621104658157,9	1,0127
5	01.12.2017	1 057 547	580548,4	1 118 406 387 417	337036444362,3	613957418855,0	1,0020
6	01.01.2018	1 090 914	594998,6	1 190 093 322 547	354023362878,5	649092320234,5	1,0316
7	01.02.2018	1 129 104	639095,0	1 274 875 537 033	408442456517,6	721604667459,8	1,0350
8	01.03.2018	1 112 905	625503,4	1 238 557 037 799	391254468371,6	696125689349,3	0,9857
9	01.04.2018	1 117 340	630695,3	1 248 448 032 606	397776501962,5	704700852342,1	1,0040
10	01.05.2018	1 118 777	628559,1	1 251 663 010 322	395086550507,2	703217762251,2	1,0013
11	01.06.2018	1 120 933	628271,3	1 256 491 695 417	394724785816,4	704250250517,3	1,0019
12	01.07.2018	1 124 608	626138,8	1 264 743 101 384	392049836553,5	704160724678,5	1,0033
13	01.08.2018	1 146 459	631231,1	1 314 368 429 293	398452643991,8	723680575828,2	1,0194
14	01.09.2018	1 191 835	655913,0	1 420 471 783 662	430221844050,1	781740359830,8	1,0396
15	01.10.2018	1 220 435	662782,5	1 489 462 396 902	439280591986,5	808883133371,5	1,0240
16	01.11.2018	1 221 280	666340,2	1 491 525 612 242	444009316757,0	813788220618,2	1,0007
17	01.12.2018	1 236 725	664516,6	1 529 488 820 711	441582342611,3	821824346467,8	1,0126
18	01.01.2019	1 193 558	630766,7	1 424 581 748 194	397866650003,1	752856937146,4	0,9651
19	01.02.2019	1 189 210	632596,9	1 414 219 677 912	400178877342,0	752290398065,7	0,9964
	SUM	**21 412 035**	**11 848 416**	**24 213 979 636 023**	**7 403 196 488 637**	**13 385 165 134 088**	
						MEDIAN=	**1,0036**

Source: calculated by the author on the basis of the source data [35]

Appendix G

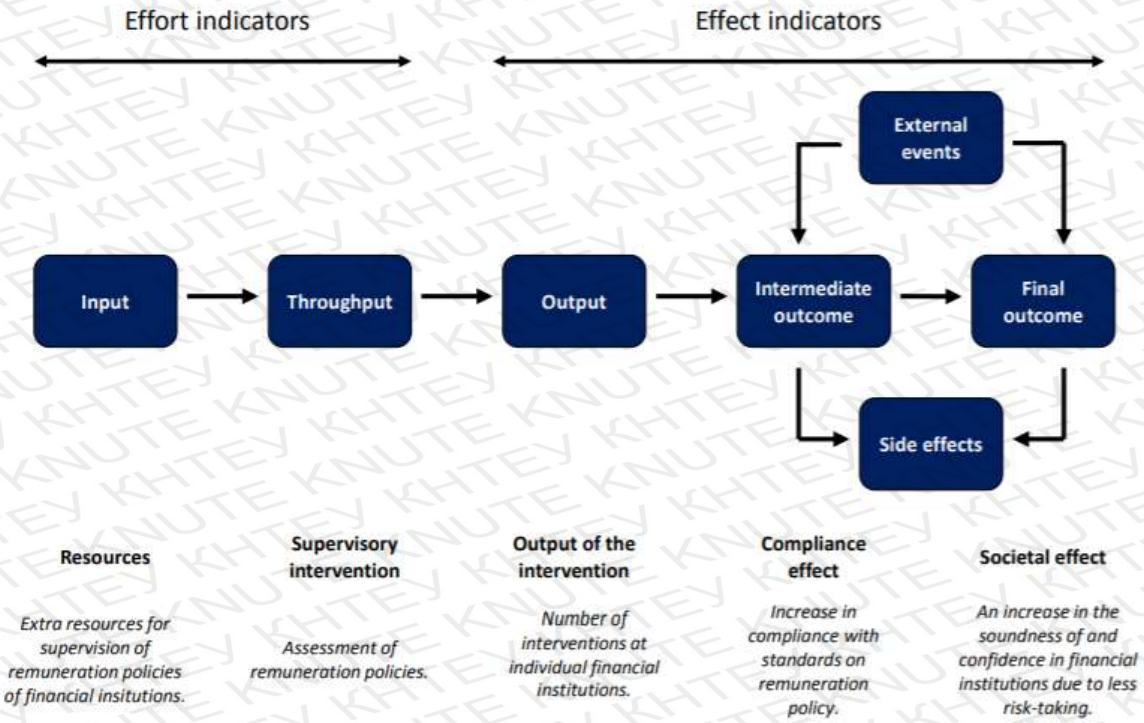


Figure. Effects chain: an example of the supervision of remuneration [58, 59]