

Issues of Competitiveness Estimation of Financial Institutions

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Abstract: The topicality of the research is stipulated by the lack of commonly accepted approaches and methods of financial institutions' competitiveness estimation. This impedes their effective development as an important element of the financial markets infrastructure. The aim of the research is to develop an algorithm and a model of financial institutions competitiveness estimation by improving existing methods in accordance with specifics of the financial sector functioning. The main research method is the analysis of factors, determining the specifics of financial institutions' functioning, and their consideration in the competitiveness estimation model. The article presents the algorithm and the model of financial institutions' competitiveness estimation, taking into account the specifics of activities by financial products producers and selling them. The model is aimed to estimate objectively the level of financial institutions' competitiveness by taking into account the factors of the development of the company environment and the specifics of selling their financial products.

Keywords: Financial market, financial institutions, competitiveness, competitiveness estimation, competitiveness estimation model.

1. INTRODUCTION

Rapid development tendencies, characteristic of financial markets, determine the following vectors of the development of the world's financial architecture: the improvement and construction of new interrelations between financial institutions, financial market authorities, and international organisations; the development of new cooperation forms and rules; the improvement of the structure and forms of financial institutions' functioning (Burinska et al., 2006). Within this vector, to provide a sufficient level of financial institutions' competitiveness is the most important factor of continuing an effective activity in the short and long terms.

The competitiveness is a certain generalising characteristic that provides a comparative estimate of the research object with respect to analogic objects on the basis of some scope of factors and indicators. The competitiveness determines business efficiency as compared to other companies within a certain time period, taking into account current political, economic, cultural and other characteristics of the macro-environment. A constant analysis and an estimation of

company's competitiveness is a component of managerial activities by a modern successful enterprise (Nitsenko et al., 2020).

A financial sector has some specifics. The vast majority of financial institutions perform rather important mediation functions. In particular, banks, investment trusts, stock markets facilitate correcting skewness of a distribution of financial resources between funds owners and borrowers, accumulate savings and invest them. If the financial sector does not function well, the whole economic system functions bad. Thus, the strategic aims of the financial sector development are ensuring the stability and promoting competitiveness (OCED Report, 2009). Similarly to the majority of the economy sectors, the advantages of the effective competitiveness in the financial sector are the appearance of new financial products, the satisfaction of a broader scope of customers' needs, an increase in the quality of financial services, lowering prices for financial products, which increases their availability (financial inclusion), the introduction of innovations, etc. An optimal level of competitiveness is obligatory to achieve the effective distribution and production (Rafay & Farid, 2018).

The studies of competitiveness in the financial sphere demonstrate considerable differences between countries in the level of competitiveness, the lack of a close link between the level of competitiveness and the level of financial system

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concentration. It means that financial systems of a liberal type without considerable obstacles for free flow of capital are more competitive (Claessens, 2009).

The technological development and rapid implementation of digitalisation in order to “reanimate” the economic and financial systems as a result of the Covid-19 pandemic change the availability and accessibility to financial resources as evidenced by an increase of the number of financial accounts among the adult population in the developing countries up to 71% in 2021 (to put this in perspective, this indicator was 42% in 2011) (Demirgüç-Kunt et al., 2022). The increase in the demand of financial services and the form of their provision leads to the increased attention of financial institutions to methods and forms of competitive struggles and the approaches to estimate their own competitiveness (Koval et al., 2021).

The vast majority of methodological approaches to the definition of the economic agents’ competitiveness level embrace production companies, while the system of ratings, developed by international organisations, presupposes a complex estimation of business organisation in a country based on the maximum available information on the economic agents’ activities. In order to estimate the level of financial institutions’ competitiveness, modified models are used, which are often limited to the estimation of the competitiveness of particular financial products on the market. Apart from that, the specifics of financial institutions’ activities also require some special approaches to the estimation of their productivity on the financial market.

2. MATERIALS AND METHODS

2.1. Research Methods

During the research, general scientific and special research methods were used. When analyzing the tendencies for the development of the world’s financial market, the methods of logical generalization, grouping, ratio analysis, and mathematical statistics. With the help of statistical methods, the estimation of current data on the development of particular sectors of the financial sector was carried out. The methods of analysis and synthesis, grouping of impact factors, the description of the elements and components of a competitiveness estimation model were used when studying the approaches to the estimation of financial institutions’ competitiveness. The methods of logical generalization were applied to formalize the obtained results and single out further lines of research.

2.2. Research Base

The theoretical base for the research consists of scholarly articles and analytical reports on the competitiveness estimation in the financial sector in general, the specifics of carrying out the competitiveness estimation in the financial sector, establishing the interrelations between the level of competition and the financial sector development, and determining the specifics of competitive struggle between financial institutions. The empirical base for the research is statistical data on the development of the main segments of the world’s financial environment as follows: the stock market, the bank-

ing market, non-banking financial market services, the financial technologies market in 2016-2021.

2.3. Research Stages

The research was conducted in the following sequence: the main tendencies for the development of the world’s financial market regarding its main components such as the stock market, the banking market, financial market services, the financial technologies market were established, which allowed to single out the main characteristic features of the present-day financial markets (an increased attention to the financial institutions’ stability, the implementation of digital technologies, and the use of financial analytics); the next step was to study the existing approaches and methods of competitiveness estimation of financial institutions; thus, the lack of standardized approaches and the fullest list of tools to estimate the competitiveness level in a banking sector were identified. Whereby, the need to develop an algorithm and a model of competitiveness estimation of financial institutions was determined as an effective instrument to increase their productivity; at the final stage, the generalization of the obtained results, upon which the algorithm and the model of competitiveness estimation of financial institutions’ functioning on the financial market in current setting were suggested. The implementation of this model in the management of financial institutions will facilitate an objective estimation of the existing position as compared to the main rivals, the detection of certain gaps and the development of efficient plan in order to tackle them in the present-day competitive environment.

3. RESULTS

3.1. The Main Tendencies on the Financial Market Development

The financial market is fast-paced, whereas its development consists not only in increasing an overall volume of operations, but also in creating new instruments, services, institutions, and segments. The current tendency for digitalization of the economic and financial spheres plays a significant role in this process. The global digitalization of the banking, insurance, and financial services markets is the most large-scaled. According to the experts’ opinions (Adroit market research, 2019), it will reach 121,7 billion USD till 2025. Such current tendencies are attributed to the following two factors: an increase in the number of smart-devices, the spread of digital payments, the use of digital currencies and tools; the cooperation of financial companies with forefront information technologies companies (Google, Apple, IBM etc.). While the first group of factors stipulates the growth in demand for digital financial services, the second one helps expand this list, cut operational costs, and provide high-quality financial services 24/7 (Fig. 1).

Among the main innovation technologies that give an impetus to the development of certain sectors of the financial market and to a certain extent determine changes in the functioning of financial institutions, there are cloud computing, API platforms, instant payments, blockchain and digital financial tools, the automation of robot processes, the use of smart machines, artificial intelligence, and quantum compu-

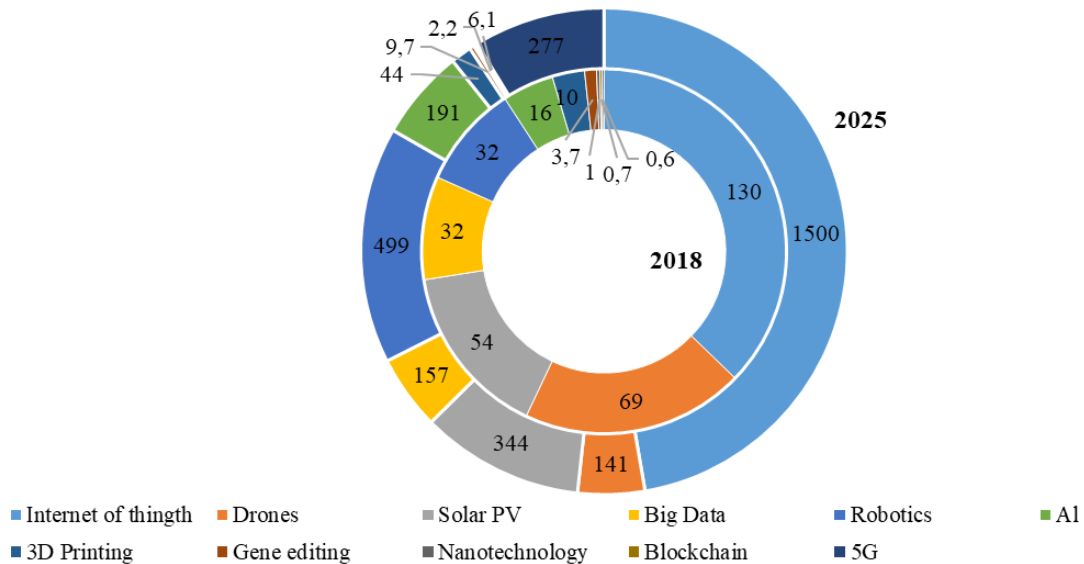


Fig. (1). Global market size estimates of new frontier technologies, USD billions.

Source: Technology and Innovation Report 2021, UNCTUD, 2021

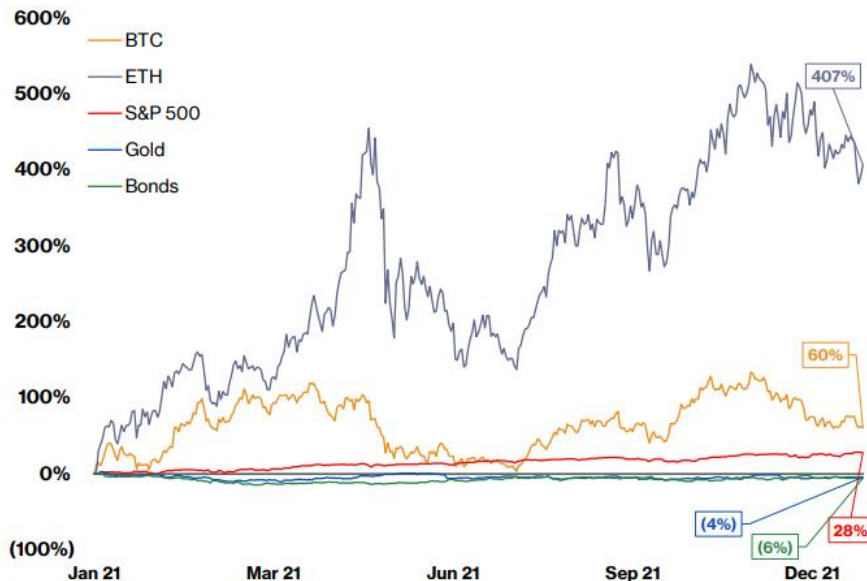


Fig. (2). Crypto Assets Outperform Traditional Macroeconomic Assets

Source: CointDesk 2021 Annual Crypto Review, 2022.

ting, the implementation of a augmented reality technology (Kniazieva & Maryna, 2019). Nowadays, the dominant positions belong to cloud computing with 60% of the market, which is attributed to a number of services offered by financial companies, namely: cloud services to exchange insurance information, cloud-based payments on the basis of medical insurance costs, financial services, cloud-based loan and leasing services, profits management, invoicing services, banking cloud services, etc.

At the same time, the rapid spread of other financial technologies such as artificial intelligence and blockchain suggests the existence of the demand in the sector and the anticipation of its sharp growth in the short run. The blockchain technology is used to develop cryptocurrencies (bitcoin, dash, etc.), quoting of which reaches the maximum on the world stock

market (Fig. 2), while some countries (the USA, Canada, Japan, Australia, etc.) already apply bitcoins for effecting payments. Investors consider the cryptocurrencies to be reserve assets which is less risky and more rentable as compared to securities. However, the growth of operations volumes and investors’ attention to the cryptocurrencies have not had a considerable negative impact on the stock market.

Significant fluctuations on the stock markets were caused by the Covid-19 pandemic and the renewal of activities in later periods. In the first half of 2022, the USA stock markets possessed almost 60% of the total value of global equities, while the second biggest share belongs to Japan and the third one – to the UK. The New York Stock Exchange continues to hold the first position in the world with the market capitalization of 25,8 trillion USD (according to Statista, as of June 2022).

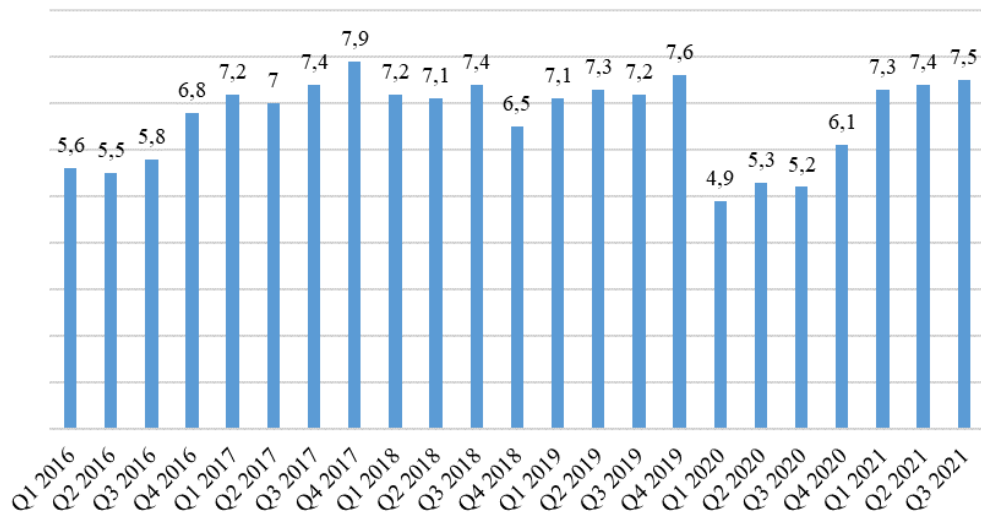


Fig. (3). Market capitalization of banking market, trillion euros.

Source: Data base of Statista, 2022.

The growing number of operations, the appearance of new tools and their usage technologies testify to the dynamic development of the stock markets. The risks minimization, capital procurement in new forms, and excessive profit making remain an impetus for the implementation of innovations. Along with the emergence of new financial products, new organization technologies of clearing, trading, access to markets, and carrying-out of requirements.

Commercial banks are key elements of all financial systems and the main financial institutions by their number. They perform the main financial functions such as credit financing, deposit opening, investments, which stimulates the economic growth. In 2021, the market capitalization of the world's banking sector was above 7,5 trillion euros (Fig. 3) (Aizpun et al.,). Meanwhile, the market capitalization means the value of the bank itself and does not characterize its assets. Consequently, when studying the banking sector development, the level of bank assets, deposits involved, and the volume of granted credits with regards to terms and currencies are analyzed.

According to sizes of assets, the Top-10 biggest banks in the world with the assets of more than 2,5 trillion USD are the following ones: the Industrial and Commercial Bank of China (China, 5,54 trillion USD), China Construction Bank Corporation (China, 4,76 trillion USD), the Agricultural Bank of China (China, 4,58 trillion USD), the Bank of China Ltd (China, 4,21 trillion USD), JPMorgan Chase Bank National association (USA, 3,74 trillion USD), Mitsubishi UFJ Financial Group Inc (Japan, 3,18 trillion USD), the Bank of America National Association (USA, 3,17 trillion USD), HSBC Holding pic (UK, 2,95 trillion USD), BNP Paribas SA (France, 2,91 trillion USD), Credit Agricole SA (France, 2,67 trillion USD). At the same time, by the market capitalization indicator, the first place is occupied by JPMorgan Chase Bank.

Central banks with the assets of more than 30,1 trillion USD in 2020 helped eschew the aggravation of crisis in the financial sector due to the reasonable adapting control during

Covid-19. The banking system stability is especially important in order to ensure functioning of the economy in crises, evidenced by the experience of 2008 and 2020. Accordingly, norms and rules of banking sector functioning are established internationally, for example, international standards Basel, which facilitate increasing the banking sector stability. Increasing requirements for the quality of the capital, assets, and risks management constitute the criteria for the access to the banking markets only for those institutions that fulfil them completely.

Insurance is the biggest segment of non-banking financial services. Insurance companies offer protection for legal and natural persons, invest heavily through insurance reserves, and constantly update a list of additional and auxiliary services. In 2021, a medium level of the spread of insurance was 9,4 % throughout the world. An increase in the demand for insurance by 3,3 % in 2021 was caused by the Covid-19 pandemic. Against the background of rigid rates by commercial lines, an increase in insurance proceeds by 10% is expected. It is also expected that the world's insurance market will reach 7 trillion USD till the end of 2022. The pandemic fixed definitely positive changes in the insurance paradigm (Swissre, 2021), based on boosting the awareness of risks and ways to minimize them by the insurance. Global contributions to life insurance has increased by 1,9 %, while contributions to other, non-life types of insurance has grown by 1,7 %, regardless of the quarantine restrictions (Fig. 4). The USA, China, Japan, the UK, and Germany remain the biggest insurance markets by the volume of contributions. Apart from that, the market development is characterized by two main trends such as: customers feel insufficient level of safety and seek to buy the extended insurance coverage, regardless of a high level of volatility. The change of the means of insurance services delivery, the need to consider cyber-threats and ensure online banking transactions have become new challenges for insurance companies. Apart from that, the insurance market is replenished with non-traditional participants, which come into the consumer credit market and become business rivals for the companies already working in

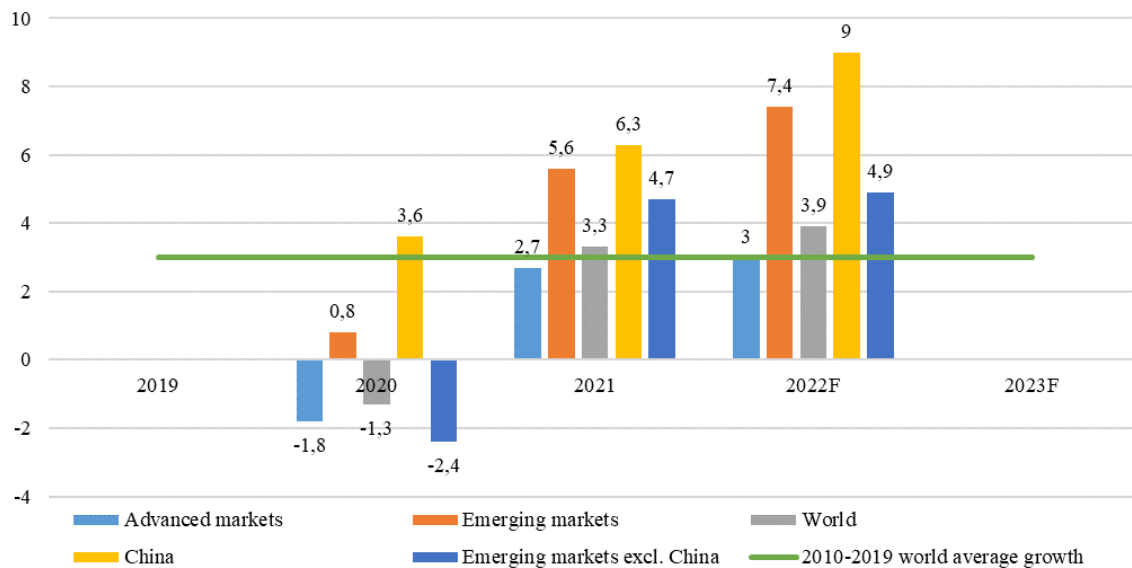


Fig. (4). Insurance market premium growth.
Source: Swiss Re Institute, 2021.

the sphere, and non-traditional insurance markets. For example, cyber-insurance has become popular and widespread.

The financial analytics market has also been increasing, which is a base for effective functioning of the financial sector and economic agents. When planning financial work and budgeting, the shift of emphasis on the minimization of expenditure, an increase in the number of technological solutions to solve financial problems and information products in the financial sphere, an increase of the awareness of the possibilities to obtain profits from the financial analytics are the main factors of this segment growth. Companies use the financial analytics decisions in order to boost key performance indicators, the profitability level, improve the resources management, strategic and operative planning. The financial analytics product allows to distinguish key performance indicators and foster the efforts to increase profits and productivity. Financial companies, which provides financial analytics services, pay considerable attention to a customer satisfaction level and try to apply forefront analytical decisions to present the broadest possible scope of information. The main analytics provider on the financial analytics market are the following companies: Oracle (USA), IBM (USA), Teradata (USA), TIBCO Software (USA), SAP (Germany), SAS Institute (USA), Alteryx (USA), Qlik (USA), FICO (USA), GoodData (USA), Birst (USA), Google (USA), Information Builders (USA), Zoho Corporation (USA), and Domo (USA). According to analysts' estimation, its volume will reach 11,4 billion USD.

3.2. Approaches to Estimate Financial Institutions' Competitiveness

Within a simplified approach, the institution competitiveness, regardless of its sphere, can be defined by the correlation between a certain individual parameter and a reference value (maximum, minimum, optimal, the best one) (Kolesnik, 2017). The individual parameter of competitiveness estimation is calculated by the formula (1):

$$k_i = \frac{A_i}{A_{i(0)}} \tag{1}$$

where k_i – an individual index of competitiveness by an i -m parameter ($i = 1, \dots, n$); A_i – a parameter value of an i -parameter of the financial institution; $A_{i(0)}$ – a reference value of an i -parameter.

When applied, in order to estimate the institutions' competitiveness, not one but several parameters-indexes are used. Therefore, they are estimated by the degree of importance of the individual parameter in order to calculate the competitiveness index (2):

$$K_g = \sum_{i=1}^n k_i \cdot W_i \tag{2}$$

where K_g – a group index of competitiveness, W_i – the level of significance of i -parameter within the set of n -indexes ($\sum W_i = 1$).

There are approaches to estimate a financial institution's competitiveness by calculating a complex financial ratio (Halyts, 2007). This method also involves the calculation of a number of competitiveness ratios for certain indexes (3):

$$R_i = \sqrt{\frac{(1-x_{1j})^2 + (1-x_{2j})^2 + \dots + (1-x_{kj})^2}{k}} \tag{3}$$

where R_i – a competitiveness ratio for an i -parameter; k – a number of analyzed periods of time; x_{ij} – financial indicators (i): assets, bank liabilities, owner's capital, selected to study financial institutions (j).

Calculated by the formula (3), the competitiveness ratio is located from 0 to 1 ($0 \leq R_i \leq 1$), when the lower the ratio, the higher the competitiveness level of a financial institution by a particular i -parameter among the selected financial institutions. The major disadvantage of this method is taking into account exclusively financial indicators of a financial institution's activity.

The approach to estimate the competitiveness on the basis of a complex of indicators, that is, indicators of competitiveness (Miroshnychenko, 2009): services attractiveness indicators; attractiveness rating; indicators of competitive environment and motivation of determining five biggest business rivals; a service price level; the principles of pricing policy optimization. In particular, competitiveness of a certain service provided by the financial institution is recommended to establish by the model (4):

$$P_r = f(I_m, N_r, D) \quad (4)$$

where I_m – a financial institution's public image; N_r – a financial institution's pricing policy; D – the availability of a service to customers.

The advantage of this method is the fact that it allows to obtain a numeric value of competitiveness of a certain service provided by the financial institution. On the other hand, its disadvantage is the need to calculate a financial institution's public image exclusively by experts and compare the obtained value with a certain reference one.

The competitiveness estimation of financial institutions is possible on the basis of matrix approach (Parasii-Verhunencko, 2008). Relative indicators are used to build the matrix as follows: a relative market share level; a relative asset income level; relative growth rate of both indicators, on the basis of which the matrix 4×4, which has 16 cells, is constructed. A developed competitive characteristic is suggested for each cell. The determination of the cell is carried out as follows: if the indicator for a specific setting of the average value for the formed group is overstated, the code "1" is set, if not, the code is "0". The coding is carried out in the following sequence: a relative market share level → a relative market share growth rate compared to the average industry growth rate → relative asset income level → relative asset income growth rate compared to the average industry asset growth rate. The matrix analysis of competitiveness allows to expand the limits of the spatial representation of information, which considerably complements the coefficient analysis and strengthens the position of the financial institution in developing strategic goals to increase the productivity of its activity on the market.

Five components of the model for estimating the competitiveness of commercial banks (Sitnikova, et al., 2021) can be applied to other groups of financial companies. It envisages calculation of the following groups of indicators: asset quality, capital adequacy, liquidity indicators, indicators of activity intensity, indicators of activity risk. Each group of indicators is represented by a number of indicators that allow to calculate the integral competitiveness index of the institution. However, the shortcomings of this model are its orientation on internal financial performance indicators and the need to calculate different weights of integral index components for different groups of financial institutions.

Given that in many economic theories, the competitiveness is closely related to profitability of activity. However, in the sphere of financial services it is sometimes rather difficult to determine the cost of financial product. In research carried out by Bikker and Spierdijk (2009), the adaptation of "price-cost margin" (PCM) approach to the activity of finan-

cial institutions (in particular banks and insurance companies) is suggested (5):

$$PCM = HHI \cdot PED \cdot (1 + CV) \quad (5)$$

where PCM – HHI – Herfindahl-Hirschman index, which reflects the competitiveness level in the financial sector; PED – price elasticity of demand; CV – a Coefficient of Variation, that is, expectations of the financial institution regarding the reaction of business rivals to changes in volumes or prices. In practice, the coefficient of variation is quite difficult to estimate accurately. Therefore, the proposed model for estimating the competitiveness of financial institutions needs further elaboration.

The competitiveness of financial institutions can also be assessed by rating systems. The CAMELS system is a fairly common rating developed for banking institutions by the US Federal Reserve System in cooperation with federal agencies, which is now widely applied and implemented in domestic legislation for banking supervision. The main components of the estimation are represented by the following six blocks: capital adequacy (C), assets quality (A), management (M), earnings (E), liquidity (L), sensitivity to market risk (S). The estimation can also be used to assess the reliability of financial companies operating in other sectors of the financial sector. The financial institution is given a quantitative evaluation based on the analysis of all components, with "1" being the highest value and "5" being the lowest one. The complex estimation is based on the received rating estimates of its components. This technique allows to assess the level of stability and reliability of the financial institution qualitatively, but it does not take into account all possible aspects, which influence on the competitiveness of financial institutions in the modern financial environment.

3.3. The Algorithm and the Model of Competitiveness Estimation of Financial Institutions

The current methodological approaches to estimating the competitiveness of financial institutions do not cover all aspects of their functioning. So, the development of a step-by-step algorithm and model of competitiveness estimation will allow financial market entities to carry out continuous assessment of their positions in a specific segment of the financial market, strengthen and improve existing positions.

The competitiveness estimation algorithm can be presented in the form of a cyclic repetition of a certain set of actions, with intermediate results at certain stages and results in the form of competitiveness estimation in a certain time interval (Fig. 5). Moreover, some processes can be transferred to automatic calculation with the data update according to the established interval, and certain operations can be carried out with the help of experts or company management.

The first stage is to define the sphere or sector of the company's activity. As of today, financial companies try to significantly expand the list of possible financial services offered to clients, and if possible they are even trying to diversify them. Indeed, the availability of auxiliary services is an additional parameter, which increases the competitive position of the company among rivals. However, for an exact estimation it is necessary to determine the specific segment of the finan-

cial market within which the competitiveness of the company will be assessed.

The second stage defines the method and approach to competitiveness estimation. The approach is to automatically or manually process the data and to form an effective estimation. The approach to estimation depends on the source of the information, the frequency of the data update, and the time for analysis. In particular, the speed of data acquisition and processing is important for stock market participants, which significantly affects the effectiveness of certain decisions and consequently affects the competitiveness of the company. The method of calculating the competitiveness index is a starting point for forming a set of indicators to be used for estimation.

The next stage is to define the integral indicator, its structural components and methods of their calculation. The formation of key competitive indicators for the financial institution is a very important stage of the estimation, as it allows to cover all the components of the functioning that have an impact on the company's performance. After determining the components of the generalized indicator, it is necessary to determine the methods of their calculation (in the absence of generally accepted approaches or formulas), the scale of the estimation and the methods of normalization. When estimating certain components of competitiveness, it is appropriate to use scores, Boolean variables, an expert evaluation method, etc. When developing a system of indicators, attention should be paid to the availability and relevance of data for the competitiveness estimation.

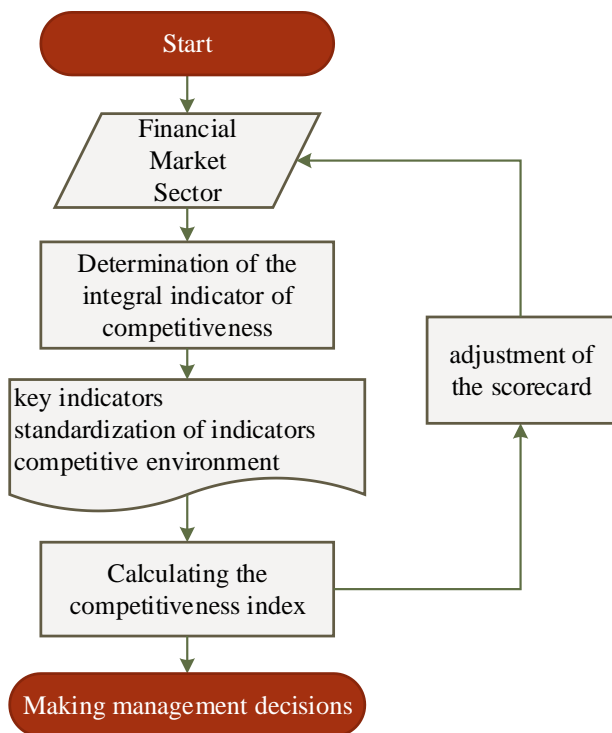


Fig. (5). Algorithm of competitiveness estimation of financial institutions.

When assessing the competitive position of a financial institution on a certain market segment, it is important to correctly form the “competitive environment”. Apart from that, the

choice of the main competitive institutions with which the comparative evaluation will be conducted should be justified and correspond to the level of development of the financial institution itself, its segment of activity, etc.

The calculation of the overall competitiveness index of the financial institution according to the formed methodology and the analysis of the results obtained are the most technical processes. On the basis of the estimation received, the management of the financial institution has an opportunity to adjust the current and strategic development plans in order to improve their positions in a specific segment of the financial market.

The continuity of the process of competitiveness estimation consists not only in a periodic calculation of key indicators, but also in the adjustment of the indicator system according to changing conditions of the market such as changes of legislation or the establishment of certain restrictions, appearance of new forms or methods of operations, etc.

When constructing the competitiveness estimation model in the financial sector, the authors of the research identify some important components as follows: efficiency, size, IT, resource management (Yokoi-Arai, Yoshino, 2006); information and computer technologies (Asongu, Nnanna, 2018); the level of industry concentration (Shirinian, Shirinian, 2019), the components of the Financial Market Development Group, according to the methodology of calculating the global competitiveness index of the World Economic Forum countries; financial indicators of the stability of the financial institution (Halyts, 2007; Parasii-Verhunenko, 2008; Sitnikova, ets, 2021). The generalization of existing studies provided an opportunity to form the following complex of the main groups-indicators of financial institutions’ competitiveness (C_I): Finance (F), Structure (S), Management (M), Technology (T), Information (I_{nf}), Innovation (I_n), Risk (R), Market (Mt):

$$C_I = f(F, S, M, T, I_{nf}, I_n, R, Mt) \rightarrow \max \tag{6}$$

The largest in number is the group of Finance indicators, which includes indicators of capital adequacy and quality, assets, reserves, liquidity, profitability, the structure of revenues and expenditures. In this group there should be the indicators on which the following indicators are evaluated: efficiency and timeliness of decisions regarding the provision of sufficient funds, stability of their attraction, the possibility of diversification of liquidity financing sources; profitability, the dynamics of structural components of incomes and expenses, the quality of the structure and sufficiency of incoming financial flows, budget and financial planning and control; the share of non-standard, negative and “problematic” assets in the structure of assets, efficiency of credit portfolio management, the quality and the level of formed reserves and insider operations; the volume of regulatory capital according to the basic types of activity and operations, approaches to formation of own capital, dividend policy, access to capital markets, etc.

The Structure group of indicators contains indicators of a management structure, a number of structural and functional subdivisions, separate structures, self-service terminals, mobile applications, website, etc. Management indicators are

management approaches, personnel management methods, available financial resources, and information.

The components of the Technology block are the development and availability of technological solutions for a specific market segment, the availability of modern computer-information systems and software for operational activities, the volume of capital investment in the development of financial products implementation technologies. Innovation characterizes the degree innovation activity financing, the development and the use of innovative financial products, services, and technologies.

The Information group provides indicators that describe the availability, completeness and timeliness of information for rapid decision-making. This group of indicators should also include the degree of awareness (financial awareness of the population, propensity to consume a particular type of services). These questions do not arise when the competitiveness of banks is assessed, but this indicator is significant in determining competitiveness for financial intermediaries on the stock market. For example, nearly 60% of the adult population of the United States owns shares, while for Eastern Europe this figure is below 30%. In general, this criterion may be seen as “the propensity of current clients to consume the company’s other financial services”. This block may also include indicators of the public image and social orientation of the financial institution, which also influence its competitiveness.

The Risk group provides a calculation of the indicators that characterize the quality of the existing risk management system, risk management policies, assess the capacity of the institution to identify, assess and control financial risks on time, allow to carry out the investigation of the sensitivity of proceeds / capital / assets to the impact of financial risks, the availability and the effectiveness of financial risk limits, etc.

Market characterizes the set of factors of the external environment in which the financial institution operates such as a size of the market sector, a degree of concentration and saturation of the sector, conditions of access to the market (licensing of activity, requirements to the property structure, volume of authorized capital, etc.), the integration of the segment into the relevant sector of the world financial market.

Taking into account different aspects of competitiveness will allow to get more objective estimation. The next step to the solution of the question of the financial institutions’ competitiveness is to determine the weights factors for the proposed model based on the study of the functioning of financial companies within certain segments of financial markets in different countries.

4. DISCUSSION

The competitiveness is a rather multi-dimensional category used to characterize different positive aspects of activity not only of economic entities, financial institutions, households, but also of separate sectors of economy, regions and countries. In the study of the category of competitiveness of different objects, the common feature is determination of the complex characteristics of the object in relation to other participants of the specified segment. In the economic sphere,

competition is considered in the context of ensuring greater productivity of economic entities compared to similar economic entities.

In the financial sphere, the competitiveness has its characteristic features, which are conditioned by the specific development and functioning of the industry, the current trends of globalization of the world financial space, the growth of “digitalization” on the basis of rapid spread of various information technologies over all spheres of life. Current research on the issues of competitiveness measurement and its characteristics in the financial sector shows that small banks are more competitive than large ones, while the large market concentration and savings enable large banks to offer a wider range of services (Rafay, Farid, 2018).

The available competitiveness studies in the financial sector cover the banking sector in most cases. Thus, the vast majority of the presented approaches to competitiveness estimation are bank-oriented and presented by models to estimate the stability and reliability of the institution, which is only one aspect of competitiveness, leaving aside such important characteristics as the institution’s public image, a list of services, a network of representative offices (access points), social responsibility etc. However, the growth rate of other segments of the financial market, the expansion of opportunities for realization of certain types of financial products for certain financial institutions envisage the necessity of research of competitiveness in other spheres, except for a banking activity.

The analysis of existing approaches allowed to identify the main components of the competitiveness estimation algorithm, which can be used to study the productivity of any financial institution, regardless of the financial sector in which it operates. The algorithm presupposes the allocation of key performance indicators by blocks of Finance, Structure, Management, Technology, Information, Innovation, Risk, and Market, followed by the indicators calculation and the comprehensive estimation of the institution’s competitiveness. The use of the model allows to cover different components of competitiveness, place the focus on key vectors for a specific sector of the financial system, and identify the priority areas for solving the problem of achieving the company's best performance on the market in comparison with its rivals.

5. CONCLUSION

At the level of retail consumption of financial products, the competition is characterized by the possibility for the client to easily change the supplier. Such changes are aimed at finding better conditions for clients and encourage financial institutions to introduce more efficient processes (services, requests processing, information, etc.), the minimization of expenses, the reduction of prices for services, the expansion of the list of goods and services, and the achievement of the best positions in the battle for customers. The effective competition, together with stability, is a priority for the development of the financial system.

In this article, the analysis of the world financial market allows to distinguish the main tendencies of its development as follows: the growth of quantity and volume of stock market

instruments, strengthening of the role of financial technologies in all segments and spheres of the financial system, the development of auxiliary financial services, in particular the financial analytics. The banking services market keeps the position of the leader in relation to other financial services, although the result of overcoming the Covid-19 crisis has become a significant increase in demand for insurance services, in particular, life insurance. Another pandemic-related trend is the pervasive digitization of the financial sector, that is, the growth of a number of gadgets, the introduction of digital payments and electronic signatures, and the growing demand for digital currencies.

In the context of the dynamic development of the competitive environment, an objective estimation of the productivity level of the financial institution and the identification of competitive advantages in comparison with providers of similar financial services is quite important. The article studies the approaches to the competitiveness estimation of the financial institutions without the involvement of the specific sector in their functioning on the financial market and attempts to build a model of competitiveness estimation taking into account its various components. The developed assumption about the constituent blocks of the general competitiveness index of the financial institution is the first stage and the basis for further discussion and research of the competitiveness components on financial markets.

REFERENCES

- Aizpun, F. C., Dai, X., Lechner, R. (2021). In 5 charts: world insurance outlook post-COVID-19. Swiss Re Institute. Retrieved from: <https://www.swissre.com/institute/research/sigma-research/sigma-2021-03.html>
- Asongu, S.A., & Nnanna, J. (2018) ICT in Reducing Information Asymmetry for Financial Sector Competition. AGDI Working Paper, No. WP/18/035, African Governance and Development Institute (AGDI), Yaoundé. Retrieved from: <http://hdl.handle.net/10419/204967>
- Bikker, J., & Spierdijk, L. (2009) Measuring and explaining competition in the financial sector. Utrecht School of Economics Tjalling C. Koopmans Research Institute Discussion Paper Series 09-01 Retrieved from: <https://core.ac.uk/download/pdf/6372048.pdf>
- Burinska, Z., Runovski, K., & Schmeisser, H. (2006). On the approximation by generalized sampling series in lp - metrics. *Sampling Theory in Signal and Image Processing*, 5(1), 59-87.
- Claessens, S. (2009) Competition in the Financial Sector: Overview of Competition Policies. *IMF Working Papers March 2009* DOI: 10.1093/wbro/lkp004. Source: OAI
- CointDesk (2021). Annual Crypto Review. Retrieved from: <https://downloads.coindesk.com/research/2021-annual-crypto-review-coindesk-research.pdf>
- Competition and Financial Markets (2009). Organisation for Economic Co-Operation and Development (OCED). Retrieved from: <https://www.oecd.org/daf/competition/43067294.pdf>
- Data base of Statista (2022). Retrieved from: <https://www.statista.com>
- Demirgüç-Kunt, A., Klapper, L., Singer, D., & Ansar, S. (2022) The Global Findex Database. Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19. Retrieved from: <https://www.worldbank.org/en/publication/globalindex/Report>
- Global Digital Transformation in Banking, Financial Services and Insurance Market by Technology (2019). (Cloud Computing, Blockchain, Artificial Intelligence, Biometrics, and Big Data), By Region and Forecast 2019 to 2025. Adroit market research. Retrieved from: <https://www.adroitmarketresearch.com/industry-reports/digital-transformation-in-bfsi-market>
- Halyts, O.V. (2007) Determining bank competitiveness and strategies for its improvement. *Regional Economy*, 2, 216-222.
- Kniazieva, T.V., & Maryna, A.S. (2019) Innovative activity of financial institutions: near future prospects. In *The financial and economic system of Ukraine: current state and directions of development*: Pokrovsk: Ukrvest, 119-136.
- Kolesnik, Ya. V. (2017). Statistical Assessment of the Banks' Competitiveness at the Financial Market: Theoretical and Methodological Aspect. *Statistics of Ukraine*, 4, 6-12.
- Koval, V., Mikhno, I., Udovychenko, I., Gordiichuk, Y., & Kalina, I. (2021). Sustainable natural resource management to ensure strategic environmental development. *TEM Journal*, 10(3), 1022-1030. doi:10.18421/TEM103-03
- Miroshnychenko, O.V. (2009) Methods of assessing bank competitiveness. *Economy of Crimea*, 28, 42-47.
- Nitsenko, V., Kotenko, S., Hanzhurenko, I., Mardani, A., Stashkevych, I., & Karakai, M. (2020). Mathematical modeling of multimodal transportation risks. *Recent Advances on Soft Computing and Data Mining*, 439-447. doi:10.1007/978-3-030-36056-6_41
- Parasii-Verhunencko, I. (2008). Assessment of banks' competitiveness based on matrix analysis. *Accounting And Auditing*, 11, 25-32
- Rafay, A., & Farid, S. (2018). Competitive Environment in Banking Industry: Evidence. *Emerging Economy. Business and Economic Review*, 10(3). 65-84. DOI: 10.22547/BER/10.3.4
- Shirinian, A.S., Shirinian, L.V. (2019) Competitiveness of the banking services market of Ukraine: rivalry factor, trends and results. *Ukraine Economy*, 6(691), 18-38.
- Sitnikova, E., Kolmykova, T., Tretyakova, I., & Lobacheva, D. (2021) Assessment of Competitiveness Factors of an Agent of the Financial Environment: Methodology and Comparative Analysis. *International Conference on Economics, Management and Technologies 2021 (ICEMT 2021)* Vol. 110. <https://doi.org/10.1051/shsconf/202111001006>
- Technology and Innovation Report (2021). UNCTUD. Retrieved from: <https://unctad.org/page/technology-and-innovation-report-2021>
- World insurance: the recovery gains pace (2022). Retrieved from: <https://www.swissre.com/dam/jcr:ca792993-80ce-49d7-9e4f-7e298e399815/swiss-re-institute-sigma-3-2021-en.pdf>
- Yokoi-Arai, M., & Yoshino, N. (2006). Concept of Competitiveness in the Financial Sector. *Financial Research and Training Center. Discussion Paper Series*, 24. Retrieved from: <https://www.fsa.go.jp/frtc/seika/discussion/2006/20061020.pdf>