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CURRENT CONSOLIDATION PROBLEMS OF THE BANKING SECTOR - COMPARATIVE ANALYSIS FOR THE EUROPEAN UNION AND BULGARIA

ABSTRACT

of dissertation for awarding of educational and scientific degree “Doctor” in the doctoral program “Finance, Money Circulation, Credit and Insurance (Finance)”

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Svishtov, 2021

The dissertation has a volume of 257 pages (215 body text). Structurally, it includes an introduction, three chapters, a conclusion, a bibliography - 28 pages, 436 sources (53 in Bulgarian, 237 in English and 146 in German) and 11 pages of appendices. In support of the main text, there are 19 tables and 38 figures included. 5 publications have been published on the topic of the dissertation. A declaration of authenticity and originality is attached.

The dissertation's defence will take place on 19.07.2021 at 10.30 a.m. in the Conference Hall "Rectorate" D.A. Tsenov Academy of Economics – Svishtov, at a meeting of the scientific jury appointed by order of the Rector of D.A. Tsenov Academy of Economics – Svishtov, composed of:

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The materials concerning the defence are available to all interested parties on the website of D.A. Tsenov Academy of Economics – Svishtov: rubric "Procedure for acquiring educational and scientific" degree "Doctor".

CONTENT

I. GENERAL CHARACTERISTICS OF THE DISSERTATION

1. Relevance of the research

The number of the credit institutions on international scale is oversized. At the same time, the world economy is developing at a relatively low pace. The existing downward tendency concerning the bank's profits causes a significant cost pressure increase for a partial compensation. At least to some extent, the efforts of the financial sector are already shifted to not developing new business models, introducing innovative products and improving customer services, but rather to covering comprehensive regulatory requirements and strengthening the current market positions. The market entry of the so-called financial technology companies (FinTechs), which are characterized by innovative activities and the adoption of typical bank functions such as payments, lead to overall market share loss by banks. In the past, the reduction in market shares was mainly due to their transfer from one bank to another, rather than via their allocation outside the banking system. A promising solution to some of the outlined problems in the banking sector is its consolidation, which determines the ***relevance*** of this study.

2. Object and subject of the dissertation

The ***object*** of this dissertation is *the bank consolidation.* The ***subject*** of the research is focused on *current problems and possible solutions* related to the banking sector's consolidation.

3. Research thesis and hypotheses of the dissertation

The ***research thesis*** can be formulated as follows: *the assessment of the comparative consolidation attractiveness and the determination of an efficient consolidation interval of a banking system can be used as a basis for developing of a process recommendation for its rational consolidation.*

In connection with the proof of the thesis the following working ***hypotheses*** are formulated:

First hypothesis: the ranking of the comparative consolidation attractiveness of the EU banking sector is practically applicable.

Second hypothesis: it is possible to calculate an efficient consolidation interval in the banking sector $\left(\text{Efficient consolidation interval}, ECI_{Banking}\right)$ at national level, which at the same time is optimal for all stakeholders.

Third hypothesis: the possibility exists to theoretically outline different options for consolidation of the banking sector in Bulgaria and to develop a process recommendation for its effective completion.

4. Purpose and tasks of the dissertation

The ***main purpose*** of the dissertation is to perform a *comparative theoretical and empirical analysis of the consolidation process in the countries of the European Union and Bulgaria.* For achieving this goal, the following ***tasks*** are formulated:

1. To outline the reasons, the catalysts and the specifics of the consolidation in the banking sector in comparison with companies from other branches;
2. To make specific recommendations for achieving the maximum possible positive consolidation effect;
3. To analyze the current problems in the banking sector and to examine its strategic orientation in the context of digitalization of banking services in the EU;
4. To make a literature review and to conduct an empirical study to identify all applicable indicators in order to analyse the comparative consolidation attractiveness of the EU banking sector;
5. To elaborate a ranking of the comparative consolidation attractiveness of the EU banking sector and to identify the problem fields of action in Bulgaria;
6. To calculate the efficient consolidation interval in the banking sector $\left(\text{Efficient consolidation interval}, ECI_{Banking}\right)$;

7. To make an analysis of all theoretically possible consolidation options of the bank capital in Bulgaria and to outline relevant recommendations for its effective completion.

5. Study scope and restrictions

The research in its theoretical and empirical part has the following ***scope restrictions***:

- *literature review*, on the basis of which indicators are derived for assessing the consolidation attractiveness of the banking sector;
- *review of the annual reports for the period 2018-2019*, mainly of the five largest credit institutions in Bulgaria, the UK and the DACH region (Austria, Germany and Switzerland). The aim is to outline the range of frequently used financial indicators that find practical application in reporting the annual bank results;
- *study of bank rankings* in order to conceptually expand the model and build an initial idea of the indicators' weight;
- *selection of a main statistical source for each indicator*. Here the aim is to avoid further normalization of the data in case of possible differences caused by the use of incompatible methodological approaches;
- *conducting an empirical study in an online format among experts in the field of banking M&A (Mergers and Acquisitions)* in order to establish additional indicators, model verification and model configuration - indicators' weight at overall model level. The sample includes specialists from Bulgaria, the UK and the DACH region;
- *study of FinTech rankings* in order to gain a general idea of their practical significance, potential and future role in the banking system.

The dissertation is based on the following more significant restrictive conditions: 1) the study focuses on the state and development of the EU banking systems and 2) the time horizon of the analysis covers the period 2015-2020. All other banking sectors including their specifics as well as all previous and subsequent periods remain outside of the scope.

6. Research methodology

For the study purposes different ***research methods*** are used: the methods of analysis and synthesis, the comparative method, the inductive and deductive methods, the method of observation, the descriptive method, the questionnaire method and others. Tables and figures are also included to illustrate the results and to achieve better visibility.

7. Literary basis of the research

The dissertation is based on the judgments and observations of both Bulgarian and foreign researchers in the field of banking M&A transactions. The Bulgarian authors directly related to the research are: A. Ganchev, A. Kaneva, A. Zahariev, B. Bojinov, H. Nenchev, S. Prodanov, S. Simeonov, S. Trifonova, T. Dimitrova, V. Milinov, Z. Vatev and others. Many foreign authors also have a significant contribution: A. Berg, A. Berger, A. Chavaltanpipat, A. Cosh, A. Hughes, A. Sohrabian, D. Becher, G. DeLong, H. Gischer, I. Hernando, J. Campa, J. Dermine, K. Paudyal, M. Alert, M. Ekkayokkaya, P. Beitel, P. Buxmann, R. Demsetz, P. Guest, P. Holmes, P. Strahan, R. Conn, R. DeYoung, S. Kholdy, T. Miklitz, T. Richter and others.

II. STRUCTURE OF THE DISSERTATION

In terms of content, the dissertation is structured as follows:

INTRODUCTION

First chapter. THEORETICAL AND APPLIED ASPECTS OF THE BANK CONSOLIDATION

1. Review of literature and practice
2. Reasons for bank consolidation
3. Methods and problems of bank consolidation

III. SYNTHESIZED PRESENTATION OF THE DISSERTATION

Introduction

The introduction substantiates the relevance of the problem developed in the dissertation, the importance of the topic and the motivation for analysing the consolidation of the banking sector. The object, the subject, the main purpose, the tasks, the leading research thesis, the research hypotheses set by the author and the used composition of research methods as well as all restrictive conditions are predefined.

First chapter. THEORETICAL AND APPLIED ASPECTS OF BANK CONSOLIDATION

Paragraph 1 of the first chapter analyzes the nature of the concept of “Mergers and Acquisitions” (M&A) reviewing the literature and practice on this topic. M&A transactions are not just about transferring ownership. They result from purchases, cooperations, sales and structural changes. *Purchases* are characterized by mergers in an existing or in a new company structure, in addition to share (share deal) and asset acquisitions (asset deal). In case of *cooperations*, it is possible to form strategic alliances through mutual capital participation and joint venture. Liquidations are typical for *sales* due to bankruptcy or corporate spin-off accompanied by partial share sales. *Structural changes* are associated with adjustments in corporate control, governance and ownership. *The present research focuses primarily on M&A transactions arising from purchases.* In the USA and Europe all available studies of this subject are grouped into the following categories:

- ***event research approach:*** measures directly the effect of a M&A transaction on the shareholder wealth;
- ***study of the overall efficiency***: verify the consolidation effect after the final completion of the transaction;
- ***analysis of the economic success:*** emphasize primarily on financial indices as a proof of the success of a M&A transaction.

In the **USA** target banks report both significant positive profits and market growth with the outset announcement of an upcoming transaction. Concerning the bidder banks the success is not clear. Most of the studies conclude that there is a negative or statistically insignificant positive effect. The combined value of both bidder and target banks has a negative or an insignificant positive effect. The stated findings emphasize that M&A transactions in the US banking sector, at least in terms of their market average, do not have a clear positive effect. In some cases positive transactional results are only attested in the long run.

Unlike the USA, with numerous empirical studies of banking transactions, **Europe** has comparatively less research in this area. The main conclusions reached can be synthesized as follows:

- in contrast to the bidders, the target banks report significant positive abnormal profits with the announcement of the upcoming transaction;
- banking cooperation (combined entity) leads to significant positive abnormal profits especially in national and diversifying banking transactions;
- consolidations have a positive effect not only when they are related to the geographical concentration of the banking activity, but also by striving of a product diversification;
- in the period after a M&A transaction there is a clear reduction of costs and a small increase in profits;
- statistically significant positive gains are only reported in domestic consolidations. Cross-border consolidations are characterized by an absence of positive consolidation effects such as efficiency improvements;
- credit institutions operating in a consolidating banking sector stand out for efficiency improvement and strengthening their market positions in the post-consolidation period, which is described by an increased level of competition;
- the shareholder profits for targets exceed the shareholder losses of bidders.

In **Bulgaria** the literature on banking sector problems emphasizes on a general analysis of the transition period till the entry into the EU. The banking activities after

2007 are mainly related to changes in the participation of foreign banks in the domestic market, bank assimilations with declared bankruptcy, ongoing efforts for solving problems concerning bad loans and accompanying improvement of the loan portfolio.

The statement in **paragraph 2** aims to outline the consolidation reasons in the banking system. The analyses show the *main reasons for consolidation in the banking sector:*

- searching for efficiency increase related to:
    - improving the quality of management;
    - cost reduction through synergies;
    - generating additional revenues through synergies.
- striving for market share growth;
- diversification improvements;
- access to the state financial security network;
- personal causes of the bank management;
- protective function.

Paragraph 3 covers the analysis of both methods and problems of bank capital consolidation.

Banking consolidation is realized through the application of various ***methods.*** The most important are: 1) acquisition and 2) merger of credit institutions.

Banking consolidations can cause ***problems*** related to a *preliminary assessment of their effect.* The presence of incomplete information may increase uncertainty about the consequences of individual bank consolidation.

An excessive positive assessment of a bank consolidation could be explained via underestimation of the potential revenues lost by the senior management.

With the consolidation of two banks with similar and regionally overlapping activities, the closure of redundant branches is mostly associated with cost reductions. However, there is a danger of declining revenues due to the growing likelihood of customers leaving the newly established credit institution.

Although consolidations offer an opportunity *to increase the bank value*, a number of obstacles are present. The existence of ambiguities related to the management activity and the authorities in the new credit institution lead to a delay in cost reductions. There is a danger not only of losing customers, but also of excessive restructuring costs. In the process of completing the consolidation, there is a decline in the competitiveness of the newly established credit institution as at least part of the human resources are occupied with the conclusion of the banking merger and hence are not available to serve customers.

An increase concerning the complexity of management apparatus is a negative consequence of an M&A transaction and is expressed in high production and control costs. The larger the banks are, the more likely is an increase of their structural complexity. This leads to partial or in some cases to complete obstruction in the realization of synergy effects.

Cultural differences are also an obstacle to bank consolidation. They increase the complexity of banking structures and boost the costs associated with the general integration process of the merging institutions.

Paragraph 4 analyzes the *catalysts for bank consolidation*, which include:

1. Technical progress helps to increase synergies by the launch and supply of banking products and services. It has a favourable effect on the achievement of positive results related to efficiency improvement through bank consolidations.

2. Deregulation assists to conduct consolidations that have been forbidden in the past. It also contributes to increase the pressure on inefficient banks in order to improve their competitiveness with own funds or through bank consolidations.

3. ***Changes in the stock market and in interest rates*** play an important role in corporate and bank consolidations. The number of M&A transactions increases with favourable market development. In comparison to the corporate consolidations, banks have a more pronounced beneficial dependence on positive market development. However, in case of negative development of the interest rates their scale has a more

distinct negative character. This dependence is explained by the fact that credit institutions are more sensitive to interest rate changes.

Paragraph 5 emphasizes the consolidation specifics in the banking sector compared to companies from other branches.

The focus of bank mergers is mainly on the ***established set of business relationships with customers.*** When buying companies, it is crucial to retain the key staff having the purpose to maintain customer relationships. In addition, there are ***difficulties in the valuation of bank assets*** and especially those with a close relationship with the loan portfolio. Banking consolidations, unlike mergers of non-financial corporations, can cause complications triggered by ***information asymmetries.*** This problem is intensified, especially when it comes to oversee transactions. Compared to non-financial corporations, ***banks are subject to stricter regulatory requirements***. This leads to greater delays of bank's consolidations as an approval in advance by the supervisors is essential**.** ***Banks have a special status regarding competition control.*** Unlike non-financial corporations, the approval of each M&A banking transaction depends on the final decision of both banking supervisors and competition authorities.

Second chapter. STUDY OF THE PRACTICE AND PROBLEMS OF BANK MERGERS AND ACQUISITIONS IN THE COUNTRIES OF THE EU

Paragraph 1 of the second chapter deals with both structure and current problems in the development of the banking sector in the EU countries.

There are different ***financial structures of the banking markets*** in the EU. The widespread Hirschman-Herfindahl index (HHI) is used for their analysis. It represents the sum of the squares of the market shares $\mathbf{s_k}$ of the largest **n** banks in a country:

$$\boldsymbol{HHI = \sum_{k=1}^{N} s_k^2}$$

HHI ranks between 0 in “full competition” and 10.000 in “absolute monopoly”. Values below 1.000 are a sign of low, between 1.000 and 1.800 for medium and over 1.800 for high market concentration.

In the pre-crisis period, the EU was characterized by a clear upward trend in the HHI index, which stopped immediately after 2008. The subsequent banking sector consolidation continued at a relatively low pace until 2014 reaching its highest HHI value of 692. The main reason for this is the decline of the average market share of the five largest credit institutions in the EU countries from 47% in 2014 to 46% in 2015. In 2016 the average value of the HHI index decreased to 661 units. This level has been maintained till including 2019. All differences in the EU are justified by a number of structural factors. The banking systems in many large countries are fragmented and include strong saving banks. In some countries, there is even a cooperative banking sector. This functional distinction reduces further the concentration degree. The banking systems of small EU countries are less fragmented and are characterized by the highest capital concentration - Estonia (2545), Finland (2420), Greece (2382) and Lithuania (2289). Exceptions here are Austria and Luxembourg with respectively 369 and 277 units in 2019. While in Luxembourg there is a huge participation of large foreign credit institutions, in Austria the high degree of fragmentation is entirely due to the structure of the banking sector, which resembles that of large EU countries.

The comparative analysis of the EU countries notes a high consolidation growth of the banking sector in ***Bulgaria.*** For example, in 2013 the average value of the HHI index in the EU was 674 compared to 730 in Bulgaria. There is a constant level of the HHI index in the EU of about 700 units accompanied by weak growth in Bulgaria on the one hand and, on the other hand, more clearly outlined concentration of bank capital in Bulgaria of 992 units.

The complex interconnectedness of the ***problems in the banking sphere in the EU countries*** hinders the future development of bank consolidation. The underlying research take into consideration only the most critical of them: the decline in revenues from maturity transformations; the drastic behaviour change in of the typical bank customers;

the emergence of direct banks; the loyalty reduction of bank customers; the oversaturated banking branch network; the rising cost level; the subsequent impact of the high-risk mortgage crisis; problems concerning the activity of rating agencies and above all their objectivity; problems related to the risk management process and its monitoring.

Paragraph 2 covers the strategic orientation in the context of digitalization of banking services.

The upcoming digital wave supported by powerful and mostly mobile end devices such as smartphones and tablets, is positively evaluated by customers. Via using innovative financial technologies, the new market participants profit by optimizing and simplifying processes that support relationships with bank customers. For most traditional credit institutions in the EU, an opening to new innovations, their restructuring and creation of synergies with FinTech companies is a major obstacle.

Digitalization plays a crucial role in ensuring the future sustainability of the banking sector through business transformation and business innovation. The ***business transformation*** is characterized by the subsequent development of existing business models and is successfully applied within an existing organization. The ***business innovation*** allows the occurrence of new business models. It can also be achieved with the help of a separate organization next to an existing one and through cooperation or shareholding. Both business transformation and business innovation must be taken seriously by banks to limit the loss of their market shares. However, the digitalization is not an universal solution to all problems in the banking sector.

Paragraph 3 focuses on the key consolidation problems of the EU banking sector:

1. Consolidation costs and growth of consolidation risk;

2. Negative combination of the development of interest rates, risk-weighted assets (RWA) and operating expenses;

3. Market fragmentation;

4. Critical factors for successful bank consolidation: the accounting of the merger (e.g. the balance sheet of the target may have a negative effect on the bidder equity under IFRS); the tax justification (related to financial damages caused by the prohibition of any

tax loss transfers, has a negative impact on the economic attractiveness of a single transaction); risk assessment models (e.g. risk assessment with possible negative effect on the equity of the newly established credit institution); regulatory approval (e.g. the final decision of the antitrust assessment is crucial for a bank merger).

5. IT integration as a key consolidation factor;

6. Achieving of maximum consolidation potential related to the need for: comprehensive coverage of cost synergies with priority combined with their scale; strict control over the purchase of goods and services; realization of the overall sales potential; quantification of sales synergies; long-term development goals; preparation of a detailed implementation plan; subsequent analysis of the achieved results; strict implementation of pre-set goals.

Paragraph 4 provides a comparative analysis of approaches for assessing the effectiveness of bank capital concentration.

Different models for assessing the market concentration are considered including their advantages, disadvantages, possibilities for application and methodological limitations.

Based on the *Structure-Conduct-Performance Paradigm*, the existing models for market concentration analysis are divided into three groups *(Figure 1):*

1) models that characterize the *market structure;*

2) models analyzing banking *market conduct*;

3) models based on *market performance.*

What most of the models have in common is that in assessing the efficiency of capital concentration they are unilaterally based on the banking sector interests. Unfortunately, neither in practice nor in the scientific literature exist a generalized model that includes all stakeholders - the state including its authorities and population, shareholders, bank staff, bank customers, creditors, suppliers and FinTechs. For this reason, the dissertation presents a model for evaluating the effectiveness of the concentration of bank capital, which is based on the idea that *the overall success of bank consolidation affects all stakeholders.* Banking system consolidation, which brings

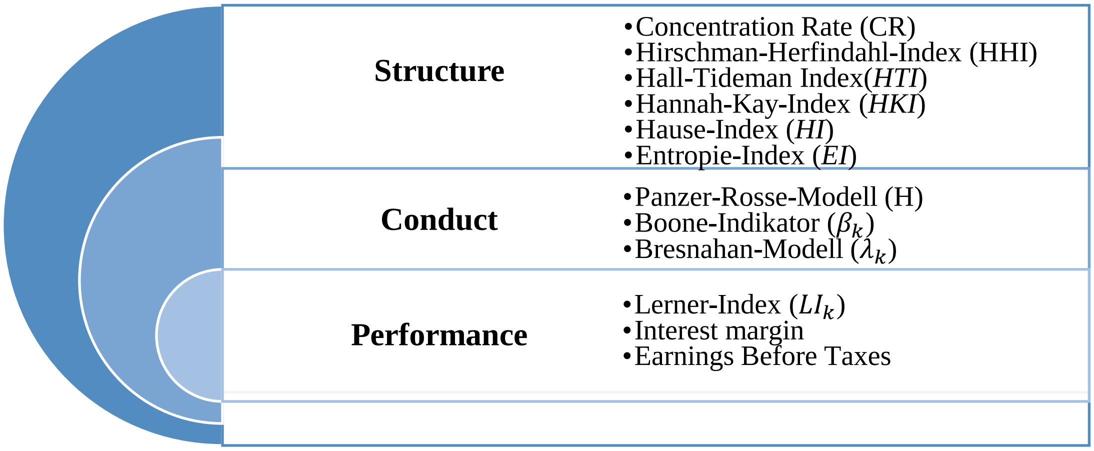

Figure 1. **Structure-Conduct-Performance Paradigm**

optimal benefits to both banks and all market participants, is the basis for long-term economic growth and financial stability.

The below mentioned hypotheses related to the ***model for assessing the effectiveness of the concentration of bank capital*** are characterized by a consistent logical interdependence:

- *First hypothesis:* "Calculation and ranking of the comparative consolidation attractiveness of the EU banking sector at national level";
- *Second hypothesis*: "Calculation of an efficient consolidation interval in the banking sector $\left(\text{Efficient consolidation interval}, ECI_{Banking}\right)$ at national level, which at the same time is optimal for all stakeholders";
- *Third hypothesis*: "To theoretically outline different options for consolidation of the banking sector in Bulgaria and to develop a process recommendation for its effective completion".

Proof or rejection of one or more of the above hypotheses has no positive or negative effect on the other hypotheses. The consistent logical interdependence of the hypotheses reflects the process before starting a single M&A transaction. The *first hypothesis* aims to reach to an initial classification of the consolidation attractiveness of banking systems. The *second hypothesis* strives for overall optimization of the banking sector through subsequent consolidation. Concluding, the *third hypothesis* provides a process recommendation for banking sector consolidation to an extent that generates long-term economic growth.

Third chapter. CONSOLIDATION PROBLEMS OF THE BANKING SECTOR IN BULGARIA

Paragraph 1 of the third chapter deals with the structure and current problems of the banking sector in Bulgaria.

The structure of the banking sector in Bulgaria is expressed through the composition of the Central Bank (CB) represented by the Bulgarian National Bank (BNB), credit institutions and branches of foreign banks (23 credit institutions in total segregated into three groups according to the official BNB classification - first group includes the 5 largest banks, second group contains 13 significantly smaller banks and third group embraces branches of foreign banks - 5 banks).

The main problems of the banking sector in Bulgaria can be outlined as follows: 1. Low assets quality; 2. Decrease in profitability; 3. Excessive capital surplus; 4. Excess liquidity; 5. Non-competitive banking infrastructure; 6. Insignificant international diversification of the loan portfolio; 7. High level of corruption; 8. Skills shortage problem; 9. Obstructive legal basis; 10.Adverse effects caused by the global pandemic (COVID-19).

Paragraph 2 presents the results of an empirical testing of the model for evaluating the efficiency of bank capital concentration.

Starting point is the calculation and ranking of the ***comparative consolidation attractiveness of the EU banking sector at national level*** (*First hypothesis).* Its determination was achieved through application of a model based on a system of indicators. Some of them are derived from a literature review. Others resulting from an empirical study (online format) among experts in the field of banking M&A - conducted in the period 11.08.2020-25.09.2020. The research scope is related to M&A banking specialists mainly from the five largest credit institutions in Bulgaria, the UK and the

DACH region, experts from the so-called big four consulting firms (Deloitte, Ernst & Young, PwC and KPMG) as well as representatives of strategic consulting firms such as McKinsey & Company and BCG from the aforementioned countries.

Using the model proposed for assessing the comparative consolidation attractiveness of the EU banking sector, a ranking is elaborated at national level. This model is a system of indicators with individual weight and divided into four groups: *1) Indicators of efficiency, profitability and stability; 2) Structural indicators; 3) Indicators of economic and demographic development; 4) Other indicators (Table 1).* The practical application of the model is aimed at assessing the consolidation attractiveness of a banking sector within a peer group - the EU.

Table 1. **Model for evaluating the comparative consolidation attractiveness - basic and additional indicators**

GROUPS OF INDICATORS	MODEL APPLICATION
BASIC INDICATORS	
1. Efficiency, profitability and stability	
(1) Cost-to-income ratio (CIR) [%]	inverse dependence: ↓low values → ↑cost efficiency → ↑consolidation potential;
(2) Return on assets (ROA) [%]	↑high values → ↑profitability → ↑consolidation potential;
(3) Return on equity (ROE) [%]	↑high values → ↑profitability → ↑consolidation potential;
(4) Total profit before tax (TPBT) from continuing operations [% of total assets]	↑high values → ↑profitability → ↑consolidation potential;
(5) Liquidity Coverage Ratio (LCR) [%]	↑high values → ↑banking stability → ↑consolidation potential;
(6) Impairment [% of total assets]	inverse dependence: ↓low values → ↑banking stability → ↑consolidation potential;
(7) Total assets:	↑total assets → ↑banking stability → ↑consolidation potential;
2. Structure	
(1) Herfindahl-Hirschmann index (HHI) for Credit institutions (CIs) total assets	inverse dependence: ↓low values → ↑consolidation potential;
(2) Shares of the 5 largest CIs in total assets (CR5)	inverse dependence: ↓low values →

	↑consolidation potential;
(3) Population per branch	inverse dependence: ↓low values → ↑consolidation potential;
(4) Population per credit institute	inverse dependence: ↓low values → ↑consolidation potential;
(5) Population per bank employee	inverse dependence: ↓low values → ↑consolidation potential;
3. Economic and demographic development	
(1) GDP change [%]	↑GDP growth → ↑positive economic effect → ↑consolidation potential;
(2) Population change [%]	↑population growth → ↑positive economic effect → ↑consolidation potential;
(3) Importance of banking industry (Total Banking Assets/ GDP)	↑role of the banking sector → ↑consolidation potential;
4. Others	
(1) Corporate tax [%]	inverse dependence: ↓corporate tax → ↑consolidation potential;
(2) Fintech Country Rankings	↑high ranking → ↑consolidation potential;
(3) Quality of overall infrastructure:	↑infrastructure quality → ↑positive economic effect → ↑consolidation potential;
(4) Corruption perceptions Index (CPI)	↑index value → ↓level of corruption → ↑positive economic effect → ↑consolidation potential;
ADDITIONAL INDICATORS	
1. Efficiency, profitability and stability	
(1) Net non-interest income [% of total assets]	↑high values → ↑profitability → ↑consolidation potential;
(2) Loan-to-deposit ratio (LDR)	inverse dependence: ↓low values → ↑liquidity → ↑consolidation potential;
(3) Net stable funding ratio (NSFR)	↑high values → ↑stability → ↑consolidation potential;
(4) Interbank market dependence [% of total assets]	inverse dependence: ↓low values → ↑stability → ↑consolidation potential;
(5) Risk-weighted assets (RWA) [% of total assets]	↑high values → ↑profitability → ↑consolidation potential;
2. Structure	
(1) Labour Productivity Index (per hours worked)	↑high values → ↑production efficiency → ↑consolidation potential;
(2) Unit Labour Cost Index (based on hours worked)	inverse dependence: ↓low values → ↑ production efficiency → ↑consolidation potential;

3. Economic and demographic development	
(1) Harmonised Index of Consumer Prices (HICP) as inflation index.	inverse dependence: ↓low deviation from the target inflation of 2% → ↑price stability → ↑consolidation potential;
(2) Human Development Index (HDI)	↑high values → ↑demographic development → ↑consolidation potential;
4. Others	
(1) Country Risk Index (CRI)	↑high values → ↓low government risk → ↑consolidation potential;
(2) WJP Rule of Law Index	↑high values → ↓rule of law → ↑consolidation potential;

On the one hand, the comparative consolidation attractiveness ranking of the EU banking sector at national level is a result of the sum of the 19 basic indicators initially identified through a literature review. On the other hand, based on the results of an empirical study among experts in the field of banking M&A the following achievement has been obtained: model verification, model configuration - weight of indicators at overall model level and model extension with additional 11 indicators referred directly or indirectly by the participants.

Regarding the model setting, the final results of above mentioned empirical study are incorporated in *Table 2*. For all 11 additional indicators a neutral average score of 50% is assigned, resulting in a total model extension of 1/3.

Table 2. **Model weight of the included indicators**

№	Indicators	Expert evaluation	Model weight
1.	Cost-to-income ratio [%]	78,30%	4,75%
2.	Return on assets [%]	62,09%	3,76%
3.	Return on equity [%]	77,67%	4,71%
4.	Total profit before tax from (TPBT) continuing operations [% of total assets]	61,84%	3,75%
5.	Net non-interest income [% of total assets]	50,00%	3,03%
6.	Liquidity Coverage Ratio (LCR) [%]	60,24%	3,65%
7.	Loan-to-deposit ratio (LDR)	50,00%	3,03%
8.	Impairment [% of total assets]	53,45%	3,24%
9.	Net stable funding ratio (NSFR)	50,00%	3,03%
10.	Interbank market dependence [% of total assets]	50,00%	3,03%
11.	Risk-weighted assets (RWA) [% of total assets]	50,00%	3,03%
12.	Total assets	51,80%	3,14%

13.	Herfindahl-Hirschmann index for Credit institutions (CIs) total assets	44,51%	2,70%
14.	Shares of the 5 largest CIs in total assets (CR5)	58,30%	3,53%
15.	Population per branch	46,07%	2,79%
16.	Population per credit institute	45,58%	2,76%
17.	Population per bank employee	43,74%	2,65%
18.	Labour Productivity Index (per hours worked)	50,00%	3,03%
19.	Unit Labour Cost Index (based on hours worked)	50,00%	3,03%
20.	GDP change [%]	65,44%	3,97%
21.	Inflation:Harmonized Consumer Price Indices (HCPI)	50,00%	3,03%
22.	Population change [%]	51,55%	3,13%
23.	Human Development Index (HDI)	50,00%	3,03%
24.	Importance of banking industry = Total Banking Assets/ GDP	58,50%	3,55%
25.	Corporate tax [%]	61,36%	3,72%
26.	Fintech Country Rankings	47,77%	2,90%
27.	Quality of overall infrastructure	66,65%	4,04%
28.	Corruption perceptions Index	64,66%	3,92%
29.	Country Risk Index (CRI)	50,00%	3,03%
30.	WJP Rule of Law Index	50,00%	3,03%
Total evaluation			100,0%

The procedure for calculating the comparative consolidation attractiveness ranking of the EU banking sector at national level includes the following *stages:*

1. *Analysis of the current state and development of the indicators* included in the model for assessing the comparative consolidation attractiveness of the banking sector incorporating data for the 2015-2019 period. The goal is to justify the impact of each indicator on the consolidation potential of the banking system on a country level.

2. Based on results of the indicators analysis, a ranking of the *EU countries* is introduced. For each country a *certain rank (from 1 to 28)* is given, *depending on the place it occupies in the assessment* of the respective model indicator. Thus, each country receives 30 separate ranks according to the 30 considered indicators.

3. The *individual model weight of the indicators* is calibrated according to the results of the conducted expert survey.

4. *Calculation of a weighted result (the total interim group assessment) for the comparative consolidation attractiveness of a country's banking sector* valuated by indicators that fall into each of the four groups.

5. The comparative consolidation attractiveness ranking of the EU banking sector at national level is *finalized* through an *overall assessment for each country* obtained as a sum of the weighted results for all indicators included in one of the respective groups.

For providing the concluding results of the comparative consolidation attractiveness ranking of the EU banking sector, the overall assessment for each country is taken into account. *The country with the lowest score tops the final ranking.*

The final results of *the comparative consolidation attractiveness ranking of the EU banking sector at national level* puts Sweden, Austria and Ireland in the first three places (*Figure 2*). Bulgaria ranks 8th. As a representative of the countries with the largest banking systems only Spain is in the top ten. The UK, France, Germany and Italy are classified 12th, 13th, 15th and 25th respectively. In view of the overall group results achieved, Cyprus and especially Greece occupied indisputable the last 27th and 28th place.

With 3.07 by an average group score of 6.12 points, Bulgaria tops the ranking in the first group ***"Efficiency, profitability and stability"***, which has a total model weight of 42.16%. Despite the negative assessments related to the extraordinary depreciation and the size of the banking sector, the cost efficiency accompanied by high profitability and liquidity ultimately strengthens the consolidation attractiveness of the banking sector in Bulgaria. It is also interesting to note that the size of banking systems (for example in the UK, France and Germany) has a negative impact on their efficiency, profitability and stability. Further efforts are required to successfully close the gap between size and process efficiency, an internal hierarchical structure that prevents rapid and adequate decisions, continuation of long-term investment in promising technologies and last but not least development of innovative products and services to meet customer needs. In addition, there is no clear correlation between the scale of the banking systems and the quality of the loan portfolio. For example, the lowest extraordinary depreciation was reported in Ireland (0.056%), which is ranked only 13th in terms of total assets.

The long-term goal of the Bulgarian banking sector should primarily target on both maintaining its structural and operational efficiency. The extraordinary depreciations are still an issue with 0.82%. All opportunities related to scale increase of the banking sector by expanding the activities scope, introducing innovative products and entering new

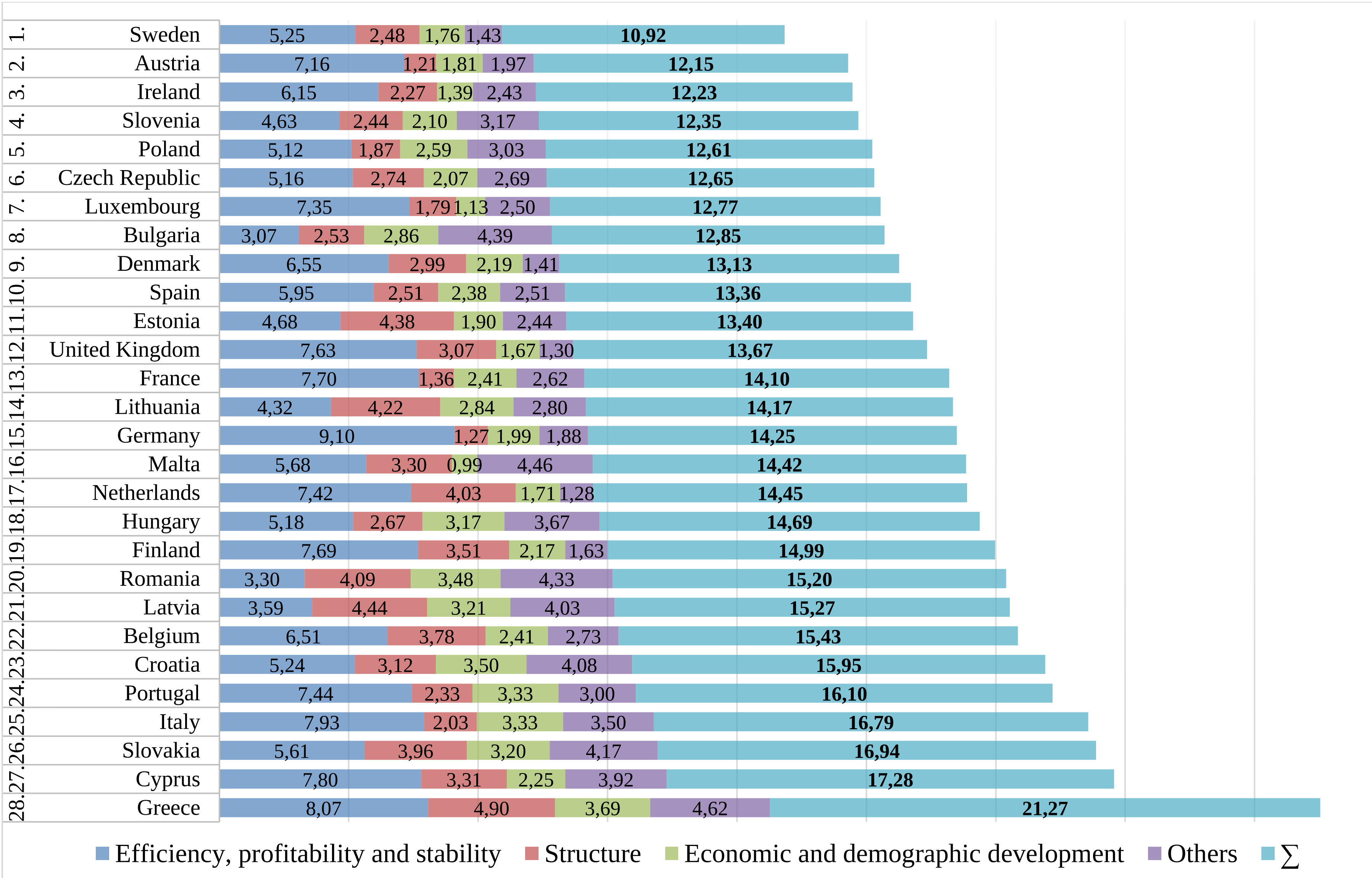

Figure 2. **Comparative consolidation attractiveness ranking of the EU banking sector**

markets must be constantly monitored, analysed and realized with the only prerequisite that a positive business case must be available.

The second group is called ***"Structure"*** and has a total model weight of 20.50%. The structural indicators put Austria on the 1st place in the group, followed by Germany and France. The Bulgarian banking sector receives a score of 2.53 above the EU average (2.95), but ranked only 12th. Except the UK, all large-scale banking sectors in the EU such as Germany, France, Spain and Italy, have a strong consolidation potential according to the structural indicators. The assumed excess of production capacity in countries with large banking sectors would theoretically lead to positive consolidation effects of synergies.

Improving the efficiency of the branch network remains with the greatest unrealized potential in the Bulgarian banking sector. It should be emphasized that a reduction of bank branches can be realized not only through subsequent bank consolidation. Alternatively, the closing of branches can be conducted at the discretion of each credit institute, if some of them are inefficient or with purposeful improvement of the cost structure.

The third group ***"Economic and demographic development"*** with a total model weight of 16.70% is headed by Malta, Luxembourg and Ireland. With 2.86 by an average available group result of 2.41 points, the banking sector in Bulgaria ranks 20th. Unfortunately, only the developments related to both GDP growth and 2% target inflation deviation receive a positive valuation. The negative trends regarding the population decline and the unsatisfactory results, attested by the human development index, have a negative effect on the assessment of the comparative consolidation attractiveness of the banking system. It is crucial to emphasise that all credit institutes are an important employer and an instrument for retaining at least some of the young professionals in Bulgaria.

The fourth group ***"Others"*** with a total model weight of 20.64% puts the Netherlands, the UK and Denmark at the forefront. Ranked 26th, the Bulgarian banking sector reaches the bottom of the group ranking with a score of 4.39 by an average of 2.93

points. Only the low corporate tax rate of 10% has a positive effect. All other criteria give a severe negative assessment, which is directly reflected in the collapse of the consolidation potential of the Bulgarian banking system. Especially, the perceived corruption and the rule of law are an insurmountable obstacle of attracting foreign investment. A possible future overcoming of the group problems mainly by the government and bringing Bulgaria at least to the average EU level, would theoretically lead to an improvement of the comparative consolidation attractiveness of the banking sector to 11.39 points (= 12.85- (4.39- 2.93)). From the current point of view, a similar result will promote Bulgaria to the 2nd place immediately after Sweden (10.92) and before Austria (12.15).

In summary, it should be emphasized that the certified results for the Bulgarian banking system are proof of the practical application of the banking business models. All positive developments in the banking sector in recent years, such as the digitalisation of banking services, clearly show that the present banking business models should not be taken as a static value, but rather as a subject to further development in view of the dynamically changing economic, legislative and political framework.

The advance analysis concentrates on the ***second hypothesis***: calculation of an ***efficient consolidation interval*** in the banking sector $\left(\text{Efficient consolidation interval}, ECI_{Banking}\right)$ at national level, ***which at the same time is optimal for all stakeholders.*** The interests of all banking sector participants can be grouped as follows № 2. – 7. (*Table 3*). In addition, not only the objectives pursued by the banks (№ 1.), but also those of the participating FinTechs (№ 8.) must be taken into account, especially in view of their growing importance and market share.

Table 3. **Main stakeholder's goals in the banking sector**

№	Stakeholder groups	Main goals
1.	***Banks***	*Financial intermediation, profit growth and maintaining market shares:* ➢ financial intermediation; ➢ profit increase;

№	Stakeholder groups	Main goals
		➢ growth of shareholder wealth; ➢ market share protection (expressed by overcoming competitive pressure); ➢ satisfaction of obligations to both customers and lenders; ➢ compliance with legal and regulatory provisions and restrictions; ➢ development of new business models and products; ➢ new customer acquisition; ➢ attracting and retaining qualified employees; ➢ providing a high-quality service; ➢ avoiding negative reputation; ➢ building long-term relationships with suppliers and business partners; ➢ overall economic and political stability.
2.	***Country/ Population***	*Macroeconomic welfare and equity:* ➢ information access and active participation in key decision-making; ➢ economic growth; ➢ preservation of jobs; ➢ collection of fee and taxes; ➢ environmental protection.
3.	***Shareholders***	*Growth of shareholder wealth* ➢ realisation of foreign exchange gains; ➢ distribution of dividends; ➢ influence on banking management.
4.	***Bank employees***	*Ensuring the future quality of living and working conditions:* ➢ high revenue realization with constant leisure time; ➢ employment quality and security (e.g. low sectoral unemployment); ➢ specialization in order to improve both educational level and personal workforce in general; ➢ information access and participation in decision-making;
5.	***Providers***	*Profit and recognition:* ➢ high level of orders; ➢ lucrative margins; ➢ independence from customers; ➢ long-term and secure business relationships.
6.	***Customers***	*Needs satisfaction:*. ➢ service quality: • competitive prices; • interested in banking services for free; ➢ low interest rates on loans and high on deposits; ➢ application of modern technologies.
7.	***Bank lenders***	*Interest rate servicing and repayment of existing financial allocations:* ➢ interest rate servicing and timely payment of allocated funds; ➢ information access; ➢ security regarding the financial stability of the borrower bank.
8.	***FinTechs***	*Market entry, subsequent gain of new market shares and profit growth:* ➢ market entry at regional and international level - overcoming barriers related to sectoral penetration; ➢ fast attraction of new customers by: 1) offering superior high quality services; 2) services for free or at very low prices.

№	Stakeholder groups	Main goals
		➢ long-term market positioning with increasing market share; ➢ cooperation through joint activity with established traditional market participants - banks; ➢ avoidance of possible regulatory restrictions; ➢ profit growth; ➢ building a positive reputation in the media space; ➢ Initial Public Offering, IPO).

The calculation of an efficient consolidation interval in the banking sector (Efficient consolidation interval, $ECI_{Banking}$) at national level, which at the same time is optimal for all stakeholders, is derived from their individual interests. The practical maintenance of a **high level of competition**, despite **HHI** results in the interval **(1.500 ≤ HHI ≤ 2.500)**, is justified in a case of an increased presence of FinTechs. For example, the upper limit of 1.500 HHI, an indicator of high competition, may be further increased depending on the presence of FinTechs, UniCorns[1] and BigTechs[2], which are operating in direct and/ or indirect competition with credit institutions:

- **Option 1:** HHI <1.500: no change in case of market absence of BigTechs, UniCorns and a small number of FinTechs with insignificant market share;
- **Option 2:** HHI < 1.700 (1.500 + 200[3]): the upper limit is raised by 200 units → FinTechs and/ or BigTechs and UniCorns with low market share;
- **Option 3:** HHI <2.100 (1.500 + 3*200): growth by a factor of 3 compared to option 2 → FinTechs and/ or BigTechs and UniCorns with significant market share;
- **Option 4:** HHI < 2.500 (1.500 + 5*200): growth by a factor of 5 compared to option 2 → FinTechs and/ or BigTechs and UniCorns with high market share and leading sector role.

From a theoretical point of view, maintaining a medium to high competitive level in a given banking sector leads to achievement and optimization the goals of all

[1] Note: UniCorns are private companies with a market value of over USD 1 billion.
[2] Note: the term covers the largest technology companies - Apple, Amazon, Google, Alibaba and Facebook.
[3] Note: an increase in the ceiling of exactly 200 units in the interval (1.500 ≤ HHI ≤ 2.500) is considered to be a significant restriction of market competition. Because of this appraisal 200 units are considered a buffer allowing bank concentration to rise without adversely affecting competition in the market presence of FinTechs and / or BigTechs and / or UniCorns.

stakeholders. On the one hand, in the process of completion the banking consolidation, the recommended HHI interval can be applied depending on the market share and the role of FinTechs and/ or BigTechs and/ or UniCorns:

$$\boldsymbol{Efficient\ consolidation\ interval, ECI_{Banking}} \rightarrow \boldsymbol{(1.500 \leq HHI \leq 2.500)}$$

On the other hand, it is necessary to analyse and take into account the maximum permitted limit for banking sector consolidation at national level set by regulatory authorities. Its respect, accompanied by the HHI recommended interval, is considered as a process framework for an effective completion of any banking consolidation. Furthermore, it should be mentioned that the approach related to the consolidation of bank capital is similar in the numerous economic unions and at the global level as well.

The process completion of the banking sector consolidation in Bulgaria (*Third hypothesis*) can theoretically be executed according to one of the following options or through a combination of them:

1. ***Organic growth.*** The leading credit institutions in Bulgaria may have a long-term goal for further market shares growth. DSK Bank (20.35%), UniCredit Bulbank (18.35%), United Bulgarian Bank (10.08%), Eurobank Bulgaria (9.50%) and First Investment Bank (8.81%) have a common market share of 67.10%. Part of the concentration of bank capital in Bulgaria in the period 2013-2020 is due to an organic growth realized primary by UniCredit Bulbank with a market share increase from 14.84% in December 2013 to 18.35% in March 2020. Supporting role has indirectly also First Investment Bank by protecting its market shares. However, a tangible consolidation progress in medium term is only possible through M&A banking transactions.

2. Internal M&A transactions. The consolidation of bank capital caused by the leading domestic credit institutions to the maximum permitted limit set by regulatory authorities in the person of the Bulgarian National Bank (BNB) and the Commission for Protection of Competition (CPC) is regulated by both BNB Act and Competition Protection Act. Last but not least, the approval of bank mergers depends not only on supervisory and competitive, but also on political aspects.

The current concentration of the Bulgarian banking sector according to BNB data and calculated through the HHI is 1.021 points (№ 1.-5., *Table 4*). Theoretically, an average market concentration is assigned for results of HHI > 1.000 units. Despite of the already achieved level of banking consolidation, a subsequent two-stage implementation of M&A transactions is possible to reach the recommended efficient consolidation interval ($1{,}500 \leq HHI \leq 2{,}500$).

A potential merger between the first group credit institutions is difficult to be executed. On the one hand, the regulators (BNB and CPC) may consider such a merger as a serious restriction of the banking competition, because a multiple HHI growth of over 200 points is possible. For example, the hypothetical merger between DSK Bank and UniCredit Bulbank will raise HHI from 1.021 to 1.829 points. On the other hand, there are many small banks in the second group with a market share below 3%. This may be crucial for the decision of the regulatory authorities regarding an approval or even a prohibition of any transaction. Finally, the maximum consolidation potential by internal M&A transactions is achieved only through mergers of banks with the largest possible scale difference. It is assumed for internal M&A transactions that the larger the target compared to the bidder, the smaller the average improvement in the operating result. The reason for this dependence is the difficulties associated with an integration of large market participants.

Not only from operational, but also from regulatory point of view, the subsequent banking consolidation in Bulgaria is recommended to be focused first on the banks of the second group with a market share of less than 3% (M&A potential = yes (target), *Table 4*). Thus, all banks in the first group including the second group representatives with market share of more than 5% (Raiffeisenbank (Bulgaria) and Central Cooperative Bank) are identified as consolidation leaders (M&A potential = yes (bidder), *Table 4*). The Bulgarian Development Bank due to its special status and the branches of foreign banks in the third group are excluded from the consolidation process (M&A potential = none, *Table 4*). In the proposed consolidation method the 7 banks categorized as bidders have a

Table 4. **Banks potential participants in internal M&A transactions**[4]

№	Bank	Market share	M&A potential
1.	DSK Bank	20,35%	yes (bidder)
2.	UniCredit Bulbank	18,35%	yes (bidder)
3.	United Bulgarian Bank	10,08%	yes (bidder)
4.	Eurobank Bulgaria	9,50%	yes (bidder)
5.	First Investment Bank	8,81%	yes (bidder)
6.	Raiffeisenbank (Bulgaria)	7,83%	yes (bidder)
7.	Central Cooperative Bank	5,36%	yes (bidder)
8.	Bulgarian Development Bank	2,85%	none
9.	Allianz Bank Bulgaria	2,50%	yes (target)
10.	ProCredit Bank, Bulgaria	2,14%	yes (target)
11.	Municipal Bank PLC	1,79%	yes (target)
12.	Investbank	1,66%	yes (target)
13.	Bulgarian-American Credit Bank	1,39%	yes (target)
14.	International Asset Bank	1,36%	yes (target)
15.	Citibank Europe, Bulgaria Branch	1,06%	none
16.	ING Bank N.V., Sofia Branch	0,96%	none
17.	D Commerce Bank	0,92%	yes (target)
18.	BNP Paribas S.A. – Sofia Branch	0,83%	none
19.	TBI Bank	0,79%	yes (target)
20.	BNP Paribas Personal Finance S.A. – Bulgaria Branch	0,65%	none
21.	Tokuda Bank	0,33%	yes (target)
22.	Texim Bank	0,32%	yes (target)
23.	T.C. Ziraat Bank, Sofia Branch	0,13%	none

Source: Own presentation according to BNB data

total market share of 80.30%, which in total is almost 7 times higher compare to the 10 banks classified as targets with only 13.22%.

After the completion of the first consolidation wave, theoretically only 13 active credit institutions will remain within the Bulgarian banking sector: first group: 5 banks, second group: 3 banks and third group: 5 banks[5]. Assuming an arithmetic average distribution of the market shares of the 10 target banks from the second group on the 7 bidder banks (M&A potential = yes (bidder), *Table 4*), then the market distribution of the banks in Bulgaria will look as presented in *Table 5.*

[4] Note: Expressbank was deleted from the Commercial Register on 30.04.2020 due to the merger with DSK Bank. Therefore, its assets are fully included in DSK Bank. Varengold Bank AG, Sofia Branch is not included in the list of banks of the third group, because of the fact that till 30.06.2020 it does not operate.

[5] Note: with the exception of Varengold Bank AG, Sofia Branch (third group), because of the fact that till 30.06.2020 it does not operate.

***Table 5.* Banks after a hypothetical first wave of consolidation**

№	Bank	Market share	M&A potential
1.	DSK Bank	22,24%	yes (bidder)
2.	UniCredit Bulbank	20,24%	yes (bidder)
3.	United Bulgarian Bank	11,97%	yes (bidder)
4.	Eurobank Bulgaria	11,39%	yes (bidder)
5.	First Investment Bank	10,70%	yes (bidder)
6.	Raiffeisenbank (Bulgaria)	9,72%	yes (bidder)
7.	Central Cooperative Bank	7,25%	yes (bidder)
8.	Bulgarian Development Bank	2,85%	none
9.	Citibank Europe, Bulgaria Branch	1,06%	none
10.	ING Bank N.V., Sofia Branch	0,96%	none
11.	BNP Paribas S.A. – Sofia Branch	0,83%	none
12.	BNP Paribas Personal Finance S.A. – Bulgaria Branch	0,65%	none
13.	T.C. Ziraat Bank, Sofia Branch	0,13%	none

The new HHI value for the size of the banking sector rises from the current 1.021 to 1.292 points. The total HHI growth is greater than 200 units, but achieved through 10 isolated mergers. Therefore, no veto is expected from the regulatory authorities (BNB and CPC). In the next consolidation wave leading to the final consolidation of the banking sector, the question of the general need for the existence of the second banking group remains open. For instance, the scale of the Central Cooperative Bank and especially Raiffeisenbank (Bulgaria) is similar to United Bulgarian Bank, Eurobank Bulgaria and First Investment Bank. The long-term preservation of the Bulgarian Development Bank is considered due to its special status.

Practically, if market shares are shifted through organic growth or disproportionate participation in the consolidation of the banks of the second group (Raiffeisenbank (Bulgaria) and Central Cooperative Bank) within the first consolidation wave, they can theoretically anchor their positions as bidders or even become targets for the banks of the first group. Such completion of the two-stage consolidation of bank capital with one of the five leading banks in the first group, the Bulgarian Development Bank and the banks of the current third group, would lead to a HHI result of 1.869 points. Consequently, the Bulgarian banking system enters the target interval of sectoral efficiency ($1,500 \leq HHI \leq$

2,500) even with a subsequent proportional distribution of the shares of banks in the second group (*Table 6*).

Table 6. **Banks after a hypothetical second wave of consolidation**

№	**Bank**	**Market share**	**M&A potential**
1.	DSK Bank	25,64%	yes (bidder)
2.	UniCredit Bulbank	23,63%	yes (bidder)
3.	United Bulgarian Bank	15,37%	yes (bidder)
4.	Eurobank Bulgaria/ First Investment Bank/ Raiffeisenbank, (Bulgaria)/ Central Cooperative Bank	14,79%	yes (bidder)
5.	Eurobank Bulgaria/ First Investment Bank/ Raiffeisenbank, (Bulgaria)/ Central Cooperative Bank	14,10%	yes (bidder)
6.	Bulgarian Development Bank	2,85%	none
7.	Citibank Europe, Bulgaria Branch	1,06%	none
8.	ING Bank N.V., Sofia Branch	0,96%	none
9.	BNP Paribas S.A. – Sofia Branch	0,83%	none
10.	BNP Paribas Personal Finance S.A. – Bulgaria Branch	0,65%	none
11.	T.C. Ziraat Bank, Sofia Branch	0,13%	none

3. External M&A transactions. Another possible option for consolidation of bank capital is the externally triggered bank mergers through an entry of foreign investors. It is considered that in international (foreign) M&A transactions, there is an inverse relationship compared to internal mergers: the bigger the size of the target, the greater the operational result.

The only difference in the approach to internal M&A transactions is that banks with a market share of more than 5% can theoretically take on the role not only as a bidder, but also as a target. The specifics of the Bulgarian banking sector, related to the leading role of credit institutions with predominantly foreign participation, should be also highlighted. The only exception of the banks in the first group is First Investment Bank.

In view of the above limitations, externally triggered consolidation of the banking sector will most likely be associated with single impulses from:

(1) foreign banks with a banking license in Bulgaria (such as Raiffeisenbank (Bulgaria) and UniCredit Bulbank) in order to strengthened their market position as a leading credit institution;

(2) foreign banks with a branch in Bulgaria **-** all banks from the third group;

(3) direct merge of a bank without prior participation in the Bulgarian banking sector.

Additionally, only the largest banks in Bulgaria are taken into consideration as a consolidation target: first and second group banks with market share > 5% (*Table 7*).

Table 7. **Shareholding in the Bulgarian banking sector**

№	**Bank**	**Market share**	**Shareholders**
1.	DSK Bank	20,35%	OTP Bank RT, Hungary - 99.91%
2.	UniCredit Bulbank	18,35%	UNICREDIT S.P.A., Republic of Italy – 99.45%
3.	United Bulgarian Bank	10,08%	KBC BANK N.V., Kingdom of Belgium – 99.92%
4.	Eurobank Bulgaria	9,50%	Eurobank Ergasias S.A., Greece – 56.14 %; ERB New Europe Holding B.V., Kingdom of the Netherlands – 43.85%;
5.	First Investment Bank	8,81%	Ivaylo Dimitrov Mutafchiev– 27.33%; Tzeko Todorov Minev – 27.33%; Bulgarian Development Bank – 18.35%;
6.	Raiffeisenbank, Bulgaria	7,83%	Raiffeisen Bank International AG (Raiffeisen SEE Region Holding GmbH), Republic of Austria – 100%
7.	Central Cooperative Bank	5,36%	CCB Group EAD – 61.05% (shares over 10 per cent)
8.	Bulgarian Development Bank	2,85%	Ministry of Economy, Repulic of Bulgaria – 100%
9.	Allianz Bank Bulgaria	2,50%	Allianz Bulgaria Holding AD – 99.89%
10.	ProCredit Bank, Bulgaria	2,14%	PROCREDIT HOLDING AG & CO.KGAA, Germany – 100%
11.	Municipal Bank PLC	1,79%	NOVITO OPPORTUNITIES FUND AGMVK, Principality of Liechtenstein – 95.5%
12.	Investbank	1,66%	Festa Holding – 52.77%; ADIL SAID AHMED AL SHANFARI, Sultanate of Oman – 28.04%; Petia Ivanova Barakova-Slavova – 10.55%
13.	Bulgarian-American Credit Bank	1,39%	CSIF AD – 61.56%; LTBI HOLDINGS LLC, the USA – 33.41%
14.	International Asset Bank	1,36%	Dynatrade International OOD – 33 per cent (shares over 10 per cent);
15.	Citibank Europe, Bulgaria Branch	1,06%	Citibank Europe Plc., Republic of Ireland – 100%
16.	ING Bank N.V., Sofia Branch	0,96%	ING Bank N.V., Kingdom of the Netherlands – 100%
17.	D Commerce Bank	0,92%	Fuat Güven (Fuat Hyuseinov Osmanov) – 55.52 %; FORTERA EAD, Republic of Bulgaria – 44.48 %;
18.	BNP Paribas S.A. – Sofia Branch	0,83%	BNP Paribas S.A., Republic of France – 100%
19.	TBI Bank	0,79%	TBIF Financial Services B.V., Kingdom of the Netherlands – 100%
20.	BNP Paribas Personal Finance S.A. – Bulgaria Branch	0,65%	BNP Paribas S.A., Republic of France – 100%
21.	Tokuda Bank	0,33%	International Hospital Services Co., Tokushukai Incorporated, Japan – 99.94%
22.	Texim Bank	0,32%	Web Finance Holding AD, Bulgaria – 18.88% (shares over 10 per cent);
23.	T.C. Ziraat Bank, Sofia Branch	0,13%	T.C. Ziraat Bankasi A.Ş., Republic of Turkey – 100%

Source: Own presentation according to BNB data

4. Shaping national champions. This consolidation option is related to the establishment of a large-scale credit institutes through organic growth and/ or merger of banks with leading Bulgarian shareholding (*Table 7*). Any foundation of national champions via consolidation requires, at least to some extent, government support within the national borders and, if necessary, the restriction of mergers triggered by foreign investors.

The shaping of national champions is possible through banking mergers only at country level. In this case, the banks do not need to be explicitly with a leading Bulgarian shareholding. However, the proposed consolidation option targets on systematic consolidation of banks with Bulgarian shareholding (with the exception of the Bulgarian Development Bank due to its special status) as their competitiveness, compared to banks with predominantly foreign participation, is relatively low. For instance, one of the reasons for this fact is related to the lack of a large parent bank in the background, which can provide bank network refinancing at inaccessible low prices in Bulgaria. Such circumstances result in distortions of competition within the Bulgarian banking system.

The proposed option to merge all banks with local share capital would lead to the building of a bank (provisionally termed *Bulgarian Bank*) with a total market share of 22%. Thus, First Investment Bank as the 5th largest bank in the first group (*Table 7*), will be absorbed by the newly established Bulgarian Bank with a leading market position in Bulgaria (*Table 8*). In this case the theoretical consolidation level of the banking sector in Bulgaria according HHI will reach 1.498 compared to the current 1.021 units. Although the total HHI growth is over 450 units, in the presence of political support for subsequent bank consolidation, the gradual practical establishment of the Bulgarian Bank is not expected to be prevented by the regulatory authorities (BNB and CPC).

Table 8. **First group banks after local equity merge**

№	Bank	Market share	Shareholders
1.	**Bulgarian Bank**	**22,00%**	**100% local share capital**
2.	DSK Bank	20,35%	OTP Bank RT, Hungary - 99.91%

3.	UniCredit Bulbank	18,35%	UNICREDIT S.P.A., Republic of Italy – 99.45%
4.	United Bulgarian Bank	10,08%	KBC BANK N.V., Kingdom of Belgium – 99.92%
5.	Eurobank Bulgaria	9,50%	Eurobank Ergasias S.A., Greece – 56.14 %; ERB New Europe Holding B.V., Kingdom of the Netherlands – 43.85%;

Source: Own presentation according to BNB data

A leading credit institute such as the provisionally termed Bulgarian Bank with local share capital, can not only stabilize and bring the banking sector into the target interval (1,500 ≤ HHI ≤ 2,500), but also further direct financial activities to protect and subsequent develop the economic interests of Bulgaria through project co-financing with pronounced national importance.

5. Assimilation of leading banks in a specific niche. A targeted acquisition of banks with leading role in a specific niche can also play an important role by the consolidation of bank capital in Bulgaria. All assimilated banks can be stored as trademarks in the parent bank. The preservation of the bank brand after the merger helps to protect market shares and retain customers of the acquired credit institution.

The advantages of a bank acquisition with a leading role in a specific niche are not only related to the positive effects of synergies such as cost reduction and process optimization, but also to an overall banking diversification. This method has also distinct protective function in crisis shocks of the banking sector by improving its profitability and stability.

The bank consolidations with a leading role in a given niche are expected to have only a secondary contribution to the sector consolidation in Bulgaria. The predominant cases of such mergers will be triggered by the ambition to reuse the trademark of the acquired bank for subsequent market growth in a specific niche. Due to the small size of banks with a leading role in a given niche, the practical entry of the Bulgarian banking sector into the target consolidation interval (1,500 ≤ HHI ≤ 2,500), triggered only by their assimilation, is practically unattainable.

6. Banking cooperations or assimilations with Fintechs, UniCorns (including direct banks) and BigTechs. All types of cooperations or acquisitions of FinTechs by the banking sector not only in Bulgaria, but also worldwide, lead to protection and/ or return of previously lost market shares. C***ooperations*** are characterized by lower costs, risk and duration by maintaining relatively high competitive pressure compared to internal development. ***Strategic mergers*** with promising FinTechs are the sole way to obtain some part of their already predominant market shares. However, both costs and risks arising from the integration of FinTechs into the banking structure remain relatively high.

According to the Bulgarian Fintech Mapping 2020 there are 100 FinTechs in total operating in 9 different areas: Payments/Billing (36); Capital Markets (13); Lending (11); Personal Finance (10); Block chain/Crypto (9); Insurance (8); Mortgage/Real Estate (6); Regtech (4) and Wealth management (3). All 79 FinTechs in the areas of Payments/Billing, Capital Markets, Lending, Personal Finance, Mortgage/Real Estate and Wealth management are in direct competition with credit institutions in Bulgaria. Despite of the fact that not all of the abovementioned FinTechs publish information on their market shares, single examples from the areas of Lending and Payments/Billing predict their significance in finance and banking.

On the one hand, by calculating the banking sector concentration, for example through the HHI, only market shares derived from the sum of the assets of all participating credit institutions are taken into account. On the other hand, the FinTech shares regardless of their role as both direct and indirect bank substitutes are not considered. This fact artificially increases the bank concentration, which does not correspond to reality. Overcoming this limitation is possible through the application of an efficient consolidation interval in the banking sector $\left(\text{Efficient consolidation interval}, ECI_{Banking}\right)$ depending on the competition intensity, the scale and the total amount of FinTech market shares. The unique advantage of the presented model is indeed justified by respecting the market shares of FinTech companies as a basis for calculating the banking sector concentration.

The profit of the Bulgarian banking sector in 2019 is BGN 1.6 billion. This figure can be used as a basis for determining the total market share of all FinTechs. For example, according to the Bulgarian Fintech Association, all FinTechs in Bulgaria made a total profit of EUR 54 million (BGN 105.6 million) during the same period. At the same time, it should be noted that by nature newly created FinTechs are capital-intensive and rarely achieve positive financial results in the first years of operation. In this case, the comparability of FinTechs' profits with that of the banking sector, as a derivative determining their relative market share, is most likely only indicator of the lowest possible limit:

Market share of FinTechs in the Bulgarian banking sector (Option A)

= *((Profit (FinTechs)/ Profit (Banking sector))*100*

*= ((EUR 54 million*1,96)/ BGN 1,6 billion)*100* **= 6,62%**

Another option for determining the theoretical market share of FinTechs within the banking sector is based on the Net Operating Income (NOI):

Market share of FinTechs in the Bulgarian banking sector (Option B)

= *((NOI (FinTechs)/ NOI (Banking sector))*100*

*= ((EUR 361 million*1,96)/ BGN 4,232 billion)*100* ***= 16,72%***

The result regarding an expected relative market share of FinTech companies in the Bulgarian banking sector, achieved through the application of ***NOI (Option B)***, is a more accurate indicator compared to the annual profits. In addition, this statement emphasizes the FinTech specifics, expressed in a low profitability immediately after their establishment. To avoid any unreasonably high reflection of FinTechs market shares, the result achieved through the application of the NOI can be adjusted, for example, by 1/3:

Market share of FinTechs in the Bulgarian banking sector

= (Option B (-)1/3) = 2/3**16,72% =* ***11,15%***

By assuming that the market shares of all FinTech companies unite in a theoretical FinTechs bank, it will occupy the 3rd place in Bulgaria (*Table 9*). Through further market share normalization after considering the so called FinTechs Bank, an overall scale reduction of the credit institutions in the first group is anticipated (*Table 7*):

- DSK Bank = 20,35 %/ (100%+11,15 %) = **18,31%**

- UniCredit Bulbank = 18,35 %/ (100%+11,15 %) = **16,51%**
- United Bulgarian Bank = 10,08 %/ (100%+11,15 %) = **9,07%**
- Юробанк България = 9,50 %/ (100%+11,15 %) = **8,55%**

Table 9. **Shareholding in the Bulgarian banking sector**

№	Bank	Market share	Shareholders
1.	DSK Bank	20,35% (**18,31%**)	OTP Bank RT, Hungary - 99.91%
2.	UniCredit Bulbank	18,35% (**16,51%**)	UNICREDIT S.P.A., Republic of Italy – 99.45%
3.	**FinTechs bank**	**11,15%**	Mixed shareholding
4.	United Bulgarian Bank	10,08% (**9,07%**)	KBC BANK N.V., Kingdom of Belgium – 99.92%
5.	Eurobank Bulgaria	9,50% (**8,55%**)	Eurobank Ergasias S.A., Greece – 56.14 %; ERB New Europe Holding B.V., Kingdom of the Netherlands – 43.85%;

Source: Own presentation according to BNB data

In the Bulgarian banking system, the efficient consolidation interval $\left(\text{Efficient consolidation interval}, ECI_{Banking}\right)$ at national level, which at the same time is optimal for all stakeholders and especially in view of the significant total market share of FinTech companies, allows subsequent consolidation of bank capital to levels, presented in ***option 3***:

$$\textbf{Efficient consolidation interval}, \boldsymbol{ECI_{Banking}} =$$

$$\textbf{HHI} < \mathbf{2.100}\ (1.500 + 3 * 200)$$

The practical realization of a possible consolidation of bank capital in Bulgaria can be performed through a combination of all six previously represented options. In view of both potential and required time aspect for a successful completion, the forecast ratio presented in *Figure 3*, is a **process recommendation for the effective completion of the bank consolidation in Bulgaria** in the shortest possible time period. First of all, priority should be given to M&A transactions with the highest consolidation potential. However, the time required for their implementation has a negative impact on the overall consolidation potential. Therefore, in order to complete the consolidation of the

Bulgarian banking sector, only options with the ***highest residual consolidation potential*** - after a time frame adjustment for their implementation, should be preferred.

The results presented in *Figure 3* assign a leading role to ***banking cooperatives or assimilations of FinTech companies*** in Bulgaria with a residual consolidation potential greater than 70%. The 2nd rank is occupied by the ***external M&A transactions***, which cover as a subset the ***internal M&A transactions***. Due to more flexible implementation, the negative time effect during their implementation is relatively low. Thus, they offer a residual consolidation potential greater than 65%. All other consolidation options have a residual consolidation potential of less than 50%. Because of this fact, they play only secondary role in the overall consolidation process. Furthermore, an ***assimilation of leading banks in a specific niche*** with a rapid realization can be defined as easily achievable goal. The fast delivery of such goals is widespread under the name "low-hanging fruits" and is an indicator of a professional project completion.

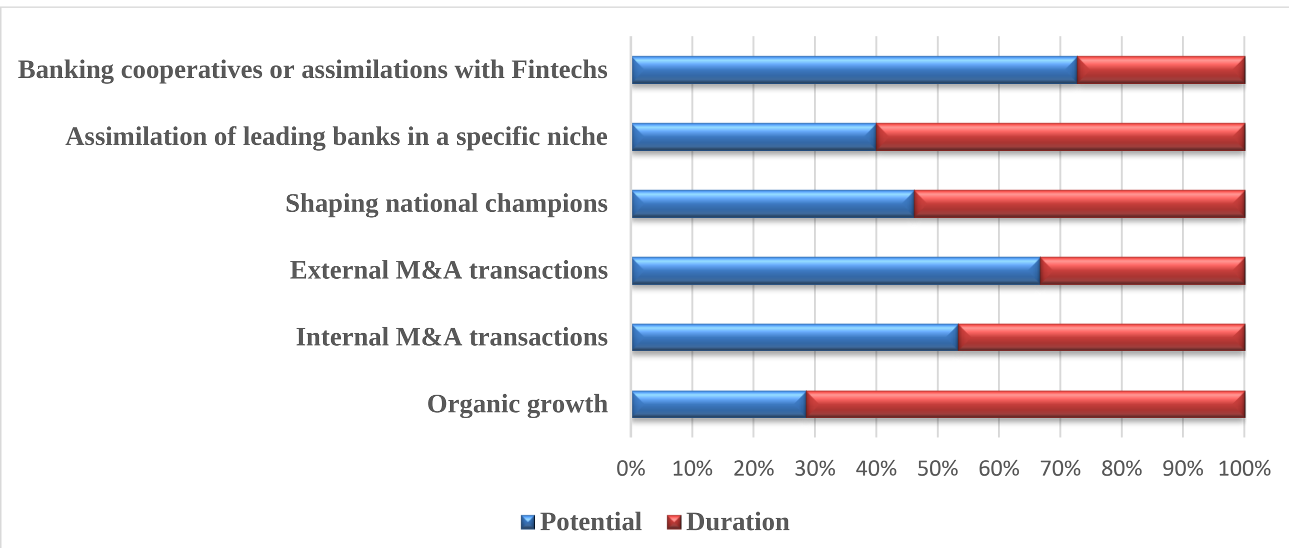

Figure 3. **Potential/ duration ratio of the banking consolidation options in Bulgaria**

Conclusion

The ***conclusion*** of the dissertation summarized the results of both theoretical and applied research of the current problems related to the consolidation of the banking sector in the EU and Bulgaria. The realization of the set purpose and tasks is reflected, with which the thesis of the dissertation is argued. The proposed options for effective completion of the banking capital consolidation in Bulgaria represent a logical conclusion of the conducted study.

IV. GUIDELINES FOR FUTURE TOPIC RELATED RESEARCH

The dissertation's results can be used for further research in the following areas:

First. The applied method for calculation and ranking of the comparative consolidation attractiveness of the EU banking sector at national level can undergo some modifications in terms of re-conducting the empirical study in online format in order to further refine the input data.

Second. The method for calculation and ranking of the comparative consolidation attractiveness at national level can be also applied to non-EU countries to identify regions worldwide with high consolidation potential.

Third. The reflected efficient consolidation interval in the Bulgarian banking sector $\left(\text{Efficient consolidation interval}, ECI_{Banking}\right)$ can be verified by the regulatory authorities (BNB and CPC) for establishing a generally accepted practical standard for either approval or rejection of all kind M&A transactions in the banking system. Last but not least, it is advisable to establish a working group with representatives of both banks with a market share of over 5% and supervisors, for example under the coordination of ABB, BNB and CPC, for assessing process recommendations for efficient consolidation of bank capital in Bulgaria. Those could be possible starting points for future enhancement of the current research, which would contribute not only to accelerate the consolidation process in the Bulgarian banking system, but also to its efficient conclusion.

V. REPORT ON THE CONTRIBUTIONS OF THE DISSERTATION

The following contributions of scientific and applied nature stand out in the dissertation:

1. Performing a detailed analysis and systematization of research results of numerous leading authors on theoretical aspects and practice in the field of banking consolidation. Special emphasis is placed on the system specifics of banking M&A transactions in Europe and the USA. This allows highlighting the main reasons and catalysts of bank consolidation.

2. Emphasis on present key problems in the development of the Bulgarian banking systems and the countries of the EU. On this basis, a critical assessment is made on both state and problems of the banking consolidation in the respective countries.

3. Offering of a ranking of the comparative consolidation attractiveness of the banking sector at national level in the EU. Its determination was achieved through application of a model based on a system of 30 indicators divided into several groups. Some indicators and their individual weights are derived from literature review. Others are resulting from an empirical study in an online format among experts in the field of banking M&A. The research scope is related to M&A banking specialists from the largest credit institutions in Bulgaria, the UK and the DACH region as well as consulting companies with expertise in banking M&A transactions.

4. Calculation of an efficient consolidation interval in the banking sector $\left(\text{Efficient consolidation interval}, \text{ECI}_{\text{Banking}}\right)$ at national level, which at the same time is optimal not only for banks, but also for all other stakeholder groups: banks, country/ population, shareholders, bank employees, providers, customers, bank lenders and FinTechs.

5. Specific proposals for efficient consolidation of the banking sector in Bulgaria are represented by exploring various alternatives for its consolidation. All possible options are evaluated on the basis of their consolidation potential and the overall implementation time frame.

VI. DECLARATION OF ORIGINALITY AND RELIABILITY OF THE DISSERTATION

The dissertation in a volume of 257 pages under the title: *"Current consolidation problems of the banking sector - comparative analysis for the European Union and Bulgaria"* is authentic and represents the author's own scientific production. It uses author's ideas, texts and visualization through graphics, diagrams, tables and formulas by complying with all requirements of the Copyright Act and all related rights by duly quoting and referring to foreign copyright, as well as data, including:

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3. Scientific results obtained, described and/ or published by other authors are duly and in detail cited in the bibliography of the dissertation. *Please note that this underlying abstract does not include all sources, which are already duly and in detail cited within the dissertation.*

Бенов

Date: 01.06.2021 **PhD student**: …………....……………. /Yuliyan S. Benov/

VII. LIST OF PUBLICATIONS RELATED TO THE DISSERTATION

STUDIES PUBLISHED IN NON-REFERENCED JOURNALS WITH SCIENTIFIC REVIEW OR PUBLISHED IN EDITED COLLECTIVE VOLUMES (1 pc.)

1. **Benov, Y. (2020).** Comparative consolidation attractiveness of the banking sphere at state level in the EU. From "Scientific research of Doctoral Students" Almanac (13th ed.). Svishtov: Academic Edition "Tsenov" - Svishtov (in press).

ARTICLES PUBLISHED IN NON-REFERENCED JOURNALS WITH SCIENTIFIC REVIEW OR PUBLISHED IN EDITED COLLECTIVE VOLUMES (2 pcs.)

2. **Benov, Y. (2019).** Analysis of the current problems in the banking sphere and its strategic orientation in the context of digitalization of banking services in the EU. From "Scientific research of Doctoral Students" Almanac (12th ed., p. 157-173). Svishtov: Academic Edition "Tsenov" – Svishtov.

3. **Benov, Y. (2018).** Specification and catalysts of the consolidation of the banking sector. From "Scientific research of Doctoral Students" Almanac (11th ed., p. 247-261). Svishtov: Academic Edition "Tsenov" – Svishtov.

REPORTS PUBLISHED IN NON-REFERENCED JOURNALS WITH SCIENTIFIC REVIEW OR PUBLISHED IN EDITED COLLECTIVE VOLUMES (2 pcs.)

4. **Benov, Y. (2020).** Consolidation reasons in the banking sector. From "Development of the Bulgarian and European economy challenges and opportunities" (3rd ed., p. 158-166). Veliko Tarnovo: VTU "St. St. Cyril and Methodius" - Veliko Tarnovo.

5. **Benov, Y. (2019).** Importance and structure of the banking sector in the countries of the European Union and Bulgaria in particular. From "Proceedings of the International scientific and practical conference “Bulgaria of regions" (2 nd ed., p. 111-116). Plovdiv: UARD - Plovdiv. Downloaded on 28.12.2020 from https://science.uard.bg/index.php/regions/issue/view/38.

VIII. REFERENCE FOR COMPLIANCE WITH THE NATIONAL REQUIREMENTS UNDER THE RULES FOR IMPLEMENTATION OF THE LAW ON THE DEVELOPMENT OF THE ACADEMIC STAFF IN THE REPUBLIC OF BULGARIA

National requirement in number of points: **30**

Number of *studies* published in non-referenced journals with scientific review or published in edited collective volumes: **1 pc.**

<u>Number of points for the author:</u> **10**

Number of *articles* published in non-referenced journals with scientific review or published in edited collective volumes: **2 pcs.**

<u>Number of points for the author:</u> **20**

Number of *reports* published in non-referenced journals with scientific review or published in edited collective volumes: **2 pcs.**

<u>Number of points for the author:</u> **10**

TOTAL points: **40** > 30