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IMPACT OF BANK SIZE ON ITS FINANCIAL INDICATORS IN BULGARIA

Introduction. One of the frequently used criteria for classifying banks is according to their size. The question of the existence of a dependence between the size of credit institutions, on the one hand, and their financial condition and results of activity, on the other hand, was logically raised. In recent years, this issue has increased its significance in Bulgaria against the background of the following circumstances: first, a process of consolidation of the banking sector in the country has begun; second, the new dimensions of the macroprudential policy impose higher regulatory requirements on banks, according to Basel III regulations; third, there is a significant number of relatively small credit institutions whose activity has a relatively limited scope; fourth, weak economic activity and low rate of economic growth of the country; fifth, the search for ways to increase the efficiency of banking activity.

Aim and tasks. The aim of the research is to establish the extent to which the size of the credit institutions in the country has an impact on various aspects of banking activity, as well as the strength of this impact. The subject of the study is focused on delineating the comparative advantages and disadvantages of big and small banks in terms of the scale of their operations.

Results. The analysis is based on information on the status and results of the activities of 18 banks in Bulgaria. The study covers observations on the development of the banking sector in 2020 and 2021. When specifying the size of banks, the traditional criterion is used, which is most often used to determine their size, namely the amount of their assets. It examines the impact of the size of credit institutions on 7 financial indicators reflecting different aspects of banking activity: Return on Assets, Efficiency of Administrative Costs, Staff Productivity, Asset Quality, Asset risk rating, Liquidity Coverage Ratio, Total Capital Ratio. On this basis, a correlation analysis is made, in which the correlation coefficient is used as the statistical measure of the dependence between the size of credit institutions (the assets), on the one hand, and their financial indicators, on the other hand. In parallel, the average values of the analyzed indicators for the respective years are calculated separately for each group of banks.

Conclusions. There is reason to claim that one of the possible instruments for increasing the efficiency of the banking sector in the country is its further consolidation. Of course, the conclusions drawn are not universal. This reflects the specifics of the banking industry in Bulgaria and the specifics of the period to which the analyzed data refer. With almost all analyzed indicators, a strong or moderate dependence between the size of the banks and the values of the considered financial indicators is outlined. This dependence is most pronounced in relation to the Return on Assets– as the size of credit institutions increases, the return on their assets increases significantly. The values with credit institutions with a wider scale of activity are better, which gives them visible advantages over other smaller banks.

Keywords: assets, size of bank, financial indicators, credit institutions, banking sector consolidation.

Introduction.

Development of the modern economic system of any hierarchical level is based on the constant pursuit of business entities to obtain competitive advantage for implementation of selected strategic objectives (Odinokova, Bozhinova & Petrova, 2018; Zagorodnya, Chernukha & Petrova, 2020). In recent years, processes of mass mergers of several smaller banks into a bigger one or mergers between individual banks have been observed. This naturally leads to consolidation of bank capital. The following can be stated as objective prerequisites for the consolidation of credit institutions: striving for diversification in order to reduce risk, strengthen market positions and strengthen competitiveness, the search for opportunities to reduce costs, wider access to new markets and sources of income, reaching higher capital requirements, etc. As a result, the trend in developed banking systems is that banks in general are becoming fewer in number but increasingly big in terms of the amount of their assets (Koch, MacDonald, 2015).

Nevertheless, one of the most frequently used criteria for classifying banks is according to their size. In the banking sector of Bulgaria, there are several credit institutions large for the country's scale and a significant number of smaller banks[1]. On this basis, the question is raised about the comparative advantages and disadvantages of big and small credit institutions and, more specifically, about the existence of a relationship between the size of the banks and their financial status and results of operations. In recent years, the examined issue has increased its significance in Bulgaria against the background of the following circumstances: first, a process of consolidation of the banking sector in the country has begun; second, the new dimensions of the macro-prudential policy impose higher regulatory requirements on

banks, according to Basel III regulations; third, the existence of a significant number of relatively small credit institutions whose activity has a relatively limited scope; fourth, the weak economic activity and the low rate of economic growth of the country; fifth, the search for ways to increase the efficiency of banking activity.

The focus of the present study is the banking sector in Bulgaria. The subject of the study is focused on delineating the comparative advantages and disadvantages of big and small banks in terms of the scale of their operations.

The purpose of the research is to establish to what extent the size of credit institutions has an impact on various aspects of banking activity (risk profile, profitability, efficiency, asset quality, liquidity), as well as the strength of this impact. For the needs of the analysis, two working hypotheses are formulated:

– First hypothesis: *"size does not matter"*, i.e. the size of credit institutions practically does not have a significant impact on their financial indicators or, if there is such a dependence, it is too weak and negligibly small;

– Second hypothesis: *"size matters"*, i.e. moderate or strong dependence between the size of the banks and the state of their financial results emerges.

The task in the further exposition is to specify which of the two hypotheses is confirmed on the basis of an analysis of empirical data reflecting the development and state of the banking sector in Bulgaria.

Literature review.

The question of the comparative advantages and disadvantages of banks of different sizes and their impact on various aspects of banking activity has long been discussed in the literature. Nevertheless, the issue under consideration has remained debatable so far. At the same time, the conclusions of the conducted studies are not always completely unambiguous.

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[1] Note: by the end of 2021, the difference between the biggest bank in the sector (UniCredit Bulbank) with assets of BGN 24,948,376 million and the smallest one (Tokuda Bank) with assets of BGN 429,746 million is 58 times (BNB, Bank Supervision).

Summarizing the nature of the research conducted in this direction, they can be systematized in several directions. In some cases, the focus is on banks that operate within individual countries. The findings in the research are based on an analysis of empirical data on the banking systems of these countries (Nelly et al, 2019; Tharu & Shrestha, 2019; AlFadhli & AlAli, 2021; Aladwan, 2015; Parvin, 2019; Tran & Phan, 2020; Arif et al, 2013; Chaudhary, 2021).

The findings made in these studies sometimes differ, which is understandable due to the fact that they depend too much on national characteristics and the specifics of the banking industry in the respective country (Parvin et al., 2019).

In other cases, the issues raised are not considered at the level of a separate country, but within the framework of a given region or community. In a study by Demirgüç-Kunt, and Huizinga (2012), based on a sample of banks from different countries, it was concluded that big banks, in principle report a more pronounced risk profile of the activity, but have a higher profitability, as measured by the return on their assets.

At the same time, the stated regularity is relative, because it has different significance depending on whether the relevant bank carries out its activities in a large or smaller national economy. This effect is more pronounced for big banks operating in larger countries, as the greater risk they take is offset by higher returns. However, this effect is not so strong for big banks that operate in smaller scale economies. With them, the return is lower, while the level of risk remains the same (Terraza, 2015).

It is concluded that it is not optimal for a very big bank to operate in a comparatively smaller national economy (Abuseridze et al., 2022). The European Banking Authority (2022) conducted an interesting study on the influence of the size of banks on some of their financial indicators. It covers the last 3 years and includes 161 European banks, which are grouped into three groups – small, medium and big.

The dependence of credit institutions of different sizes on the following indicators and financial parameters is investigated - capital adequacy (Tier 1 capital ratio, Total capital ratio, Leverage ratio), credit risk and asset quality (Ratio of non-performing loans and advances, Coverage ratio for non-performing loans and advances, Forbearance ratio for loans and advances, Ratio of non-performing exposures), profitability (Return on equity, Return on assets, Cost to income ratio, Net interest income to total net operating income, Net fee and commission income to total net operating income, Net trading income to total net operating income, Net interest margin) and liquidity (Loan-to-deposit ratio, Asset encumbrance ratio, Liquidity coverage ratio, Net stable funding ratio).

The general conclusion of the European Banking Authority's (2022) analysis is that small and medium-sized banks generally take more risk, but generate higher returns, have a higher level of capitalization and at the same time maintain better liquidity indicators compared to big credit institutions. Naturally, it should be taken into account the fact that the data were to some extent influenced by the crisis situation in recent years, related to the spread of the COVID-19 pandemic and later the war in Ukraine.

In terms of its scope, the research in the considered area can be summarized in two aspects. In some cases, a dependence is sought between the size of the banks and a specific aspect of their activity - for example, their efficiency (Vatev, 2017), risk profile (Varotto & Zhao, 2018; Laeven, Ratnovski & Tong, 2014) etc.

In other cases, the existence of dependence between the scales of credit institutions and a wider range of heterogeneous aspects of their activity is analyzed. In his study, Sinkey (2002) examines this dependence regarding US banks. According to their size, he groups them into 4 categories – the biggest banks, big banks, medium banks and small banks.

On this basis, regularities in the change of the structure of assets (including loans and liquid assets), the structure of liabilities (including deposits), the structure of income and expenses, indicators of return on assets (ROA), return on equity (ROE), net interest margin (NIM), the capital structure and the degree of risk depending on the size of the banks are analyzed.

Methodology.

In relation to determining the size of credit institutions, in the current study, the traditional criterion is used, according to which this is most often done, namely depending on the amount of their assets. We assume that the size of assets most accurately expresses the scope and scale of banking activity.

Next, the strength and direction of the relationship between the amount of assets (the size of the banks) and some key aspects of their activity is investigated. These aspects are quantitatively represented through the use of the following financial indicators (Laeven, Ratnovski, Tong, 2016):

– Profitability, expressed through the Return on Assets (ROA) indicator. This is the "net profit/assets" ratio, which gives information about the amount of profit per unit of assets;

– Efficiency of Administrative Costs (EAR), assessed using the "administrative costs/assets" ratio. It gives an idea of the amount of administrative costs per unit of assets;

– Staff Productivity (SP), measured by the amount of revenue from the direct sale of banking products (income from interest, fees and commissions) in relation to the number of employees. The ratio "revenues from sales/number of bank staff" expresses in a peculiar way the labor productivity of bank associates;

– Asset Quality (AQ), assessed by the ratio "expenses for impairment of financial assets/gross amount of loans";

– Risk profile of banking activity, represented by the Asset risk rating (ARR) indicator. This is the "risk-weighted assets/total assets" ratio. According to modern capital standards, the amount of risk-weighted assets is formed by taking into account credit risk, market risk and operational risk. The higher

percentage of the indicator means a more pronounced risk profile of the activity;

– Liquidity measured by the Liquidity Coverage Ratio (LCR). The relationship "liquid assets/net cash outflow" has been used by regulatory authorities for supervisory purposes for several years (European Commission, 2013);

– Capital adequacy, expressed by Total Capital Ratio (TKR), which is calculated as the ratio "regulatory own capital/risk-weighted amount of assets" (European Commission, 2013). It expresses the extent to which the banks' total capital base corresponds to the risk profile of their activity.

On this basis, a correlation analysis is made, in which *the correlation coefficient* is used as the statistical measure of the dependence between the size of credit institutions, on the one hand, and their financial indicators, on the other hand. In parallel, the average values of the analyzed indicators for the respective years are calculated separately for each group of banks. Looking for the typical and permanent in trends for the sector as a whole, we consider it rational to exclude in the study the bank with the highest and the bank with the lowest value of the analyzed indicator at a given moment, assuming that this may be due to temporary, random, extraordinary circumstances or certain specifics in the activity.

The study covers the observation of the development of the banking sector in Bulgaria for two consecutive years, namely 2020 and 2021, which proved to be financially difficult for the country's banks.

Macroeconomic instability and the slowing rate of economic growth, mainly caused by the shock and restrictions related to the spread of the COVID-19 pandemic, have a negative impact on the state of the sector. According to data from the Central Bank of Bulgaria (BNB, 2022), in 2020, compared to the previous year (2019), the banks report a deterioration of a number of key financial indicators - lower credit activity by -18.8% (loans decreased from BGN 94,449 million at the end of 2019 to BGN 76,678 million in 2020), a drop in net profit by -51.3% (from BGN 1,675 million to BGN 815 million), a decrease in net interest income by - 3.5% (from

BGN 2,746 million to BGN 2,649 million) and fee and commission income by -6.1% (from BGN 1,106 million to BGN 1,038 million), increase in costs for impairment of financial assets by 103.2% (from BGN 431 million to BGN 876 million).

Only in 2021, credit institutions began to successfully adapt to the new realities, as a result of which a gradual recovery and growth was observed - an increase in loans compared to 2020 by 7.4%, an increase in net profit by 73.7%, of net interest income by 4.1%, of income from fees and commissions by 19.5%, as well as a reduction of expenses for impairment of financial assets by -32.2%.

The Bulgarian National Bank groups the banks in the country into several groups according to the amount of their assets (BNB, 2022). The first group includes the biggest 5 banks at a given time, and the second one - the rest (in 2020 and 2021, they are 13 in number). Our attention is focused on the state and results of the activity of these 18 credit institutions, presented by name in Table 1. A separate third group includes the branches of foreign banks in Bulgaria. Due to some of their peculiarities, they are deliberately not included in the study.

Table 1. Grouping of the banks in Bulgaria according to the amount of their assets

	Banks	Assets (thousands of BGN)	
		2020	*2021*
First group	1. UniCredit Bulbank	24 107 528	24 948 376
	2. DSK Bank	22 812 230	24 413 119
	3. First Investment Bank	10 782 868	11 267 721
	4. United Bulgarian Bank	12 797 128	15 530 321
	5. Eurobank Bulgaria	12 103 849	14 490 546
Second group	6. Investbank	2 200 616	2 525 742
	7. Municipal Bank	2 058 144	1 927 190
	8. Raiffeisenbank (Bulgaria)	9 625 566	10 846 991
	9. Bulgarian-American Credit Bank	1 868 859	2 198 692
	10. ProCredit Bank (Bulgaria)	2 920 520	3 191 211
	11. D Commerce Bank	1 160 962	1 402 210
	12. Tokuda Bank	396 799	429 746
	13. TBI Bank	1 027 687	1 305 647
	14. International Asset Bank	1 780 961	1 911 730
	15. Texim Bank	462 623	536 816
	16. Allianz Bank Bulgaria	3 285 384	3 624 068
	17. Bulgarian Development Bank	4 006 854	3 412 189
	18. Central Cooperative Bank	6 641 290	7 380 634

Source: BNB (2022).

The conclusions are based on the information officially published by the Bulgarian National Bank (BNB) on the state of the banking sector in the country, reflected in the financial statement (balance sheet) of the respective bank, the income statement and references to them.

Information from the annual financial statements of credit institutions for 2020 and 2021 was used for the values of some indicators. The specific values of the indicators outlined above of the studied banks for the respective years are presented in Table 2.

Table 2. Values of the analyzed indicators for 2020 and 2021 in Bulgaria.

Banks	Year	ROA (%)	EAR (%)	SP (thousands of BGN)	AQ (%)	ARR (%)	LCR (%)	TKR (%)
UniCredit Bulbank	2020	0,93	1,01	176	1,14	46,0	203	26,1
	2021	1,26	1,02	193	0,85	44,7	242	27,1
DSK Bank	2020	0,84	1,32	172	1,50	61,0	288	21,8
	2021	1,61	1,20	174	0,69	59,9	302	22,6
First Investment Bank	2020	0,36	1,57	162	1,42	65,6	237	21,7
	2021	0,89	1,49	183	1,79	62,0	230	21,5
United Bulgarian Bank	2020	0,85	1,27	154	0,56	47,7	225	22,0
	2021	1,10	1,10	168	0,00	43,6	227	21,2
Eurobank Bulgaria	2020	1,26	1,33	149	1,21	56,4	320	20,9
	2021	1,17	1,24	155	0,81	52,5	360	20,6
Investbank	2020	0,10	1,09	91	1,68	54,6	286	19,9
	2021	0,14	0,92	101	1,20	50,0	411	18,9
Municipal Bank	2020	0,44	1,25	43	0,10	21,6	636	24,4
	2021	-0,47	1,33	43	-0,25	23,6	1057	23,8
Raiffeisenbank (Bulgaria)	2020	0,59	1,44	136	0,88	53,0	272	23,7
	2021	1,18	1,39	157	0,24	51,1	265	22,0
Bulgarian-American Credit Bank	2020	0,61	1,18	158	0,69	62,8	139	16,3
	2021	0,80	1,13	171	0,47	55,4	193	16,8
ProCredit Bank (Bulgaria)	2020	1,16	1,26	230	0,25	45,7	153	16,6
	2021	1,21	1,43	267	0,26	45,3	158	16,6
D Commerce Bank	2020	0,65	1,75	93	0,54	55,6	265	20,6
	2021	1,33	1,51	102	0,20	56,6	333	17,5
Tokuda Bank	2020	-0,04	2,58	64	0,19	56,8	762	18,6
	2021	0,08	2,43	64	0,26	51,6	1030	18,6
TBI Bank	2020	1,34	9,50	166	5,68	81,2	283	19,7
	2021	2,08	10,02	193	3,72	61,3	319	23,2
International Asset Bank	2020	0,76	1,18	77	-0,28	35,0	1102	21,9
	2021	1,11	1,14	85	-1,15	32,1	716	24,5
Texim Bank	2020	0,03	2,47	55	-0,04	52,2	291	24,0
	2021	0,05	2,22	62	0,02	49,0	246	22,2
Allianz Bank Bulgaria	2020	0,25	0,86	152	1,44	37,0	456	18,6
	2021	0,48	0,85	156	0,84	35,4	306	17,9
Bulgarian Development Bank	2020	-2,61	0,52	348	1,13	75,7	496	34,2
	2021	-2,03	0,69	339	1,85	87,6	376	35,8
Central Cooperative Bank	2020	0,31	1,34	112	0,18	55,3	412	17,1
	2021	0,33	1,31	113	0,19	56,0	382	16,1
	2021	1,17	1,24	155	0,81	52,5	360	20,6

*Source: Author's calculations based on data from the BNB (2022).*

Results.

In the further exposition, the strength of dependence between the values of the investigated indicators of the banks in Bulgaria, on the one hand, and their size (assets), on the other hand, is sought, , for example, based on the analysis of *Return on Assets (ROA)*. Achieving a certain profit is a priority goal of banks and a key quantitative indicator for the successful functioning of credit institutions. Reduced economic activity, mainly due to the COVD-19 pandemic, adversely affects the p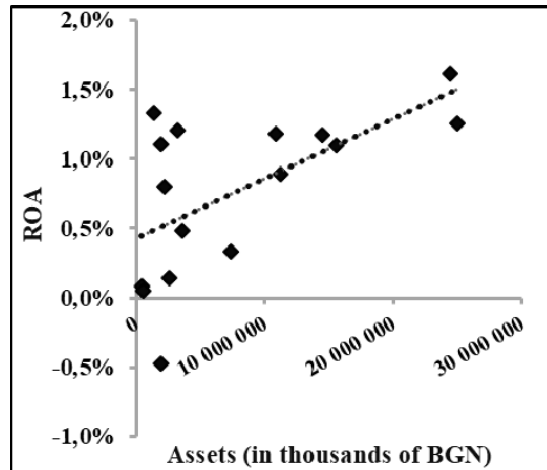rofitability of the sector as a whole. The data show that this unfavorable trend, however, is reflected with unequal force in the big banks of the first group and in the smaller ones of the second group. As for the banks from the first group, profits in 2020 compared to the previous year (2019) decreased by -38% (from BGN 1,165,212 thousand to BGN 71,6724 thousand), while for those from the second group, this decrease was by more than 5 times (from BGN 455,630 thousand to BGN 72,250 thousand). The average return on assets (ROA) for 2020 and 2021 for big banks is 0.85% and 1.21%, and for smaller banks it is significantly lower at 0.44% and 0.57%, respectively.

The comparative analysis shows that there is a certain relationship between the size of the banks and the return of their assets (ROA). This conclusion is confirmed by the correlation analysis of the dependence between them. The obtained correlation coefficient between the amount of bank assets, on the one hand, and their profitability, on the other hand (0.51 and 0.60, respectively), expresses a strong positive relationship (Fig. 1). A regularity is outlined, according to which as the size of banks increases, the profitability of their assets (ROA) increases. A similar situation is observed in relation to the next analyzed indicator as *Efficiency of Administrative Costs (EAR)*.
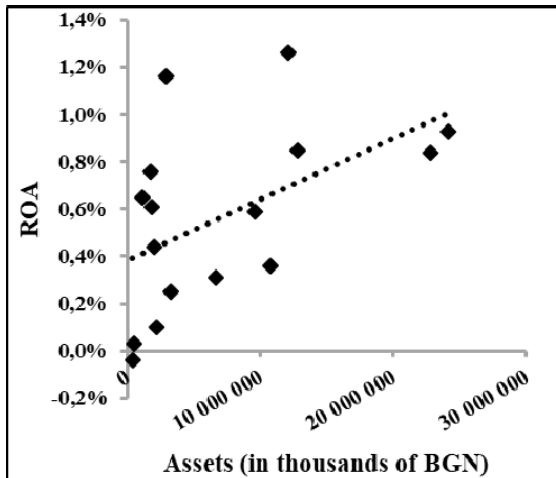
2020 (Correlation coefficient 0,51)   2021 (Correlation coefficient 0,60)

Fig 1. Return on Assets (ROA) by bank size.

The data show that in terms of the relationship "administrative costs/total assets", the big banks in Bulgaria have a visible superiority. It is typical for them that the increase in assets occurs with a relatively minor increase in administrative costs compared to the smaller ones. With the growth of the assets of the five big banks of the first group in 2021 compared to 2020 by 9.7%, administrative expenses report an increase of only 2.9%. For the rest of the smaller banks in the second group, the increase in assets by 8.7% led to an increase in administrative expenses by 13.1%. The regularity that clearly stands out is that banks from the first group consistently register a lower percentage of administrative expenses to assets compared to those from the second group (Fig. 2).
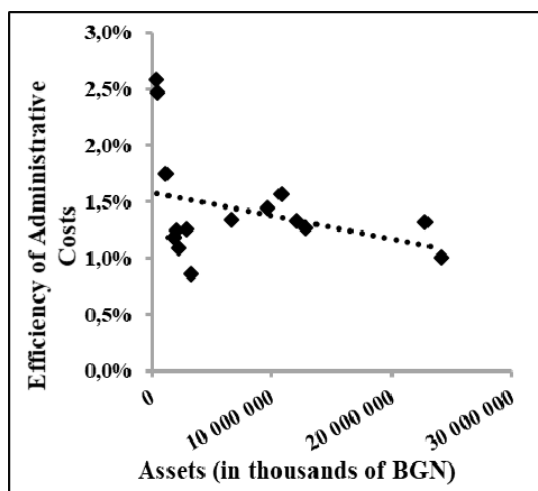
2020 (Correlation coefficient -0,33)   2021 (Correlation coefficient -0,36)
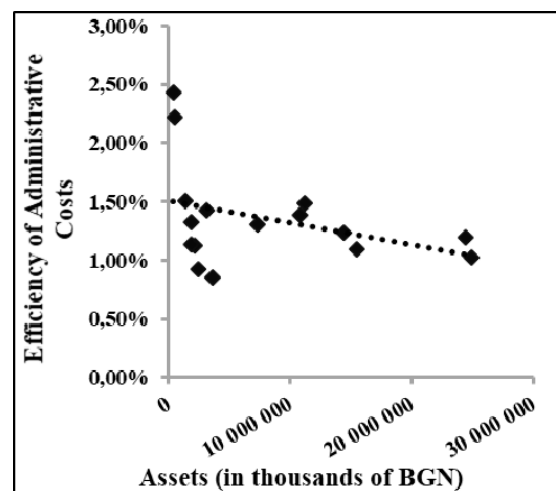
Fig. 2. Efficiency of administrative costs depending on the size of the banks.

The average values of the indicator for 2020 and 2021 for big banks are 1.30% and 1.21%, and for smaller ones they are lower - 1.49% and 1.42%, respectively.

This is explainable because, due to its relatively constant nature, there is the possibility that with an increase in the volume of activity, administrative costs will absolutely increase, but in relation to a unit of activity, they will decrease. This conclusion is confirmed by the correlation analysis of the dependence between the size of assets and the percentage of administrative expenses per 100 BGN assets – the correlation coefficient expresses a moderate negative dependence between them (-0.33 and -0.36 for 2020 and 2021 respectively). In general, for the banks of the first and second groups, *Staff Productivity (SP)* (sales revenue per staff member) in 2021 increased by 8% compared to the previous year (2020) (from BGN 150,000 to BGN 162,000).

At the same time, there is a moderate positive correlation between the size of the banks and the productivity of the bank staff - the correlation coefficients between the amount of bank assets and the productivity of the staff for 2020 and 2021 are 0.47 and 0.40, respectively (Fig. 3). It should be noted that in the direction under consideration most big banks of the first group definitely have an advantage. In the two analyzed years, the average values of the "sales revenue/number of staff" ratio for them was higher (BGN 163 thousand and BGN 175 thousand) compared to the other smaller banks of the second group (respectively 121 thousand BGN and 134 thousand BGN).
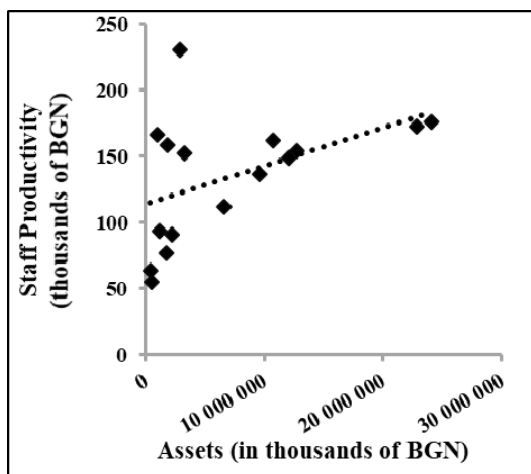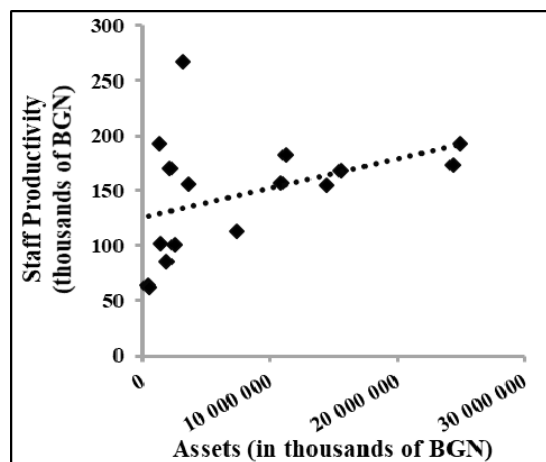
2020 (Correlation coefficient 0,47)   2021 (Correlation coefficient 0,40)

Fig. 3. Productivity of the bank staff according to the size of the banks.

One of the instruments by which *Asset Quality (AQ)* is assessed is the cost of impairment of financial assets. For individual credit institutions and for the sector as a whole, these costs have varied widely over the past few years. As for the banks of the first and second groups, their significant increase in 2020 compared to the previous year (2019) was observed by more than two times (from BGN 401,562 thousand to BGN 831,927 thousand, i.e. by 107%). Obviously, the unfavorable conditions, mainly caused by the COVID-19 pandemic, lead to a deterioration in the quality of loans and force credit institutions to provision an increasingly large part of them. With the relative stabilization of the situation in 2021, the opposite trend is reported - a decrease in depreciation costs compared to 2020 by -31% (from BGN 831,927 thousand to BGN 572,119 thousand). At the same time, the analysis shows that these changes do not uniquely depend on the size of the banks. The empirical distribution of financial asset impairment costs as a percentage of gross loan size by bank asset size outlines a weak (in 2021 correlation coefficient: 0.17) or moderate (in 2020 correlation coefficient: 0.47) positive dependence between them (Fig. 4). This shows that the bank size factor does not have a decisive impact on the quality of loans. There is little reason to believe that those with larger assets have lower quality loan portfolios or vice versa.
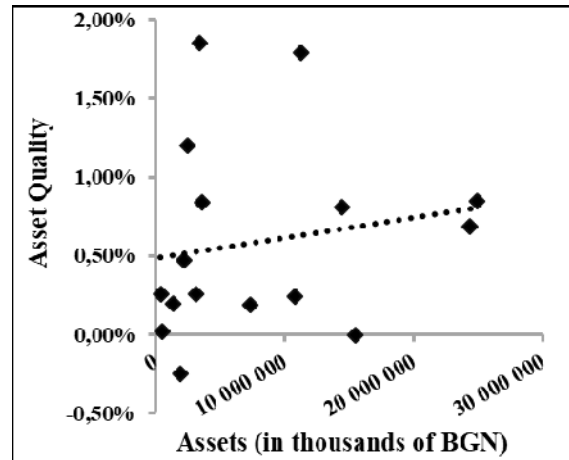
However, the presence of a weak or moderate positive relationship between them reflects on the higher average loan provisioning rate of the big banks of the first group (1.17% in 2020 and 0.83% in 2021) compared to the rest from the second group (0.64% and 0.48% respectively).
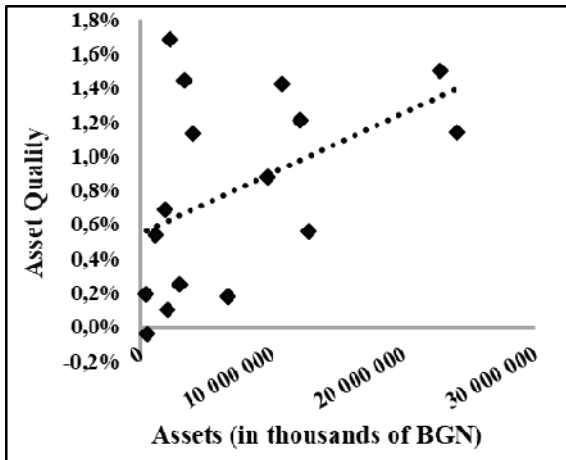
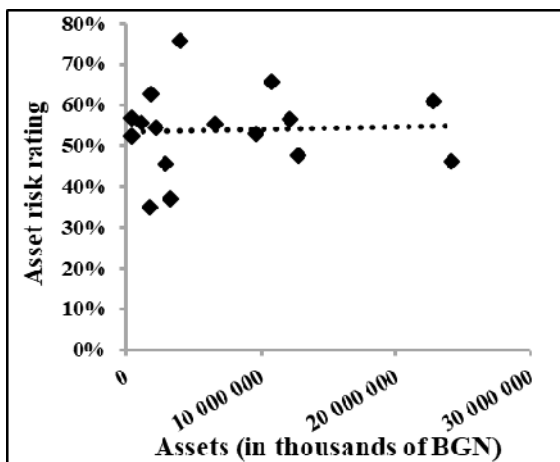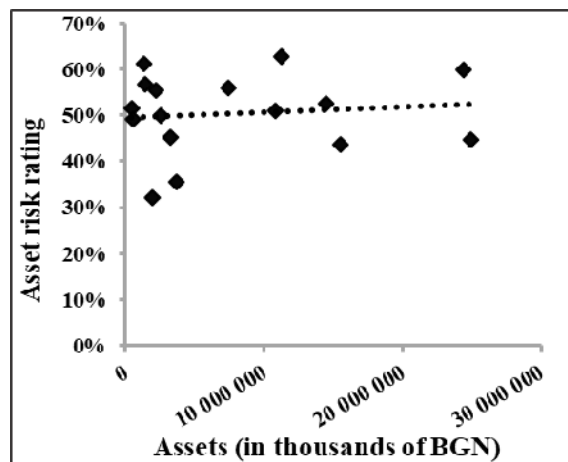2020 (Correlation coefficient 0,47)   2021 (Correlation coefficient 0,17)

Fig. 4. Asset quality in terms of bank size.

An interesting question is whether big or smaller banks tend to take more risks or vice versa - the scope of activity does not affect their risk appetite. Convenient measures in this direction are the sum of risk-weighted assets and their relative size compared to the total size of assets – *Asset Risk Rating (ARR)*. The degree of risk of the assets provides a concentrated expression for the nature of the credit and investment policy. In periods of rapid growth and credit expansion, the percentage of risk-weighted assets of the banks in Bulgaria compared to their assets as a whole shows high values (for example, in pre-crisis 2008, this percentage in

total for the banks of the first and second group reached 80%). The decrease in the activity of credit institutions in the last few years, accompanied by an effort to limit risk exposures, leads to a decrease in the corresponding percentage (54% in 2020 and 50% in 2021). The information from Figure 5 illustrates the existence of a very weak relationship between the size of banks and the percentage of their risk-weighted assets. The low correlation coefficients (0.05 for 2020 and 0.11 for 2021) give reason to conclude that the size of the credit institutions in Bulgaria practically does not have a significant impact on the risk profile of their activity.
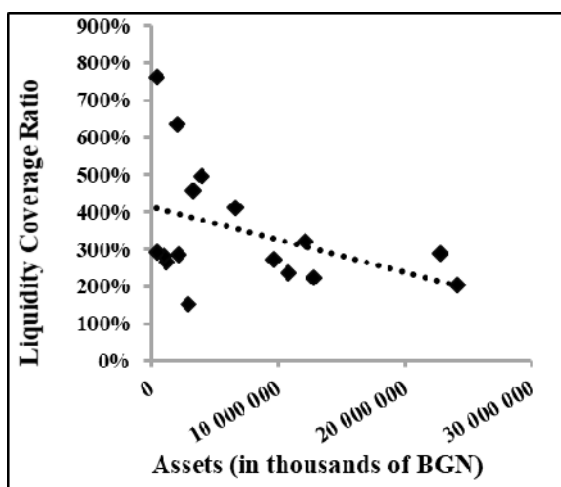

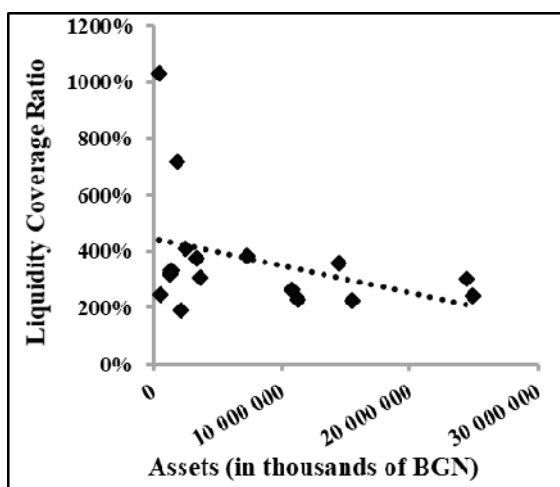2020 (Correlation coefficient 0,05)   2021 (Correlation coefficient 0,11)

Fig. 5. Degree of the risk of the assets according to the size of the banks.

Over the analyzed years, the average values of the ratio "risk-weighted assets/total assets" are approximately the same with regard to the big banks of the first group (55% for 2020 and 53% for 2021) and the smaller banks of the second group (53 % and 49% respectively).As for the liquidity situation of the banking sector in Bulgaria, it is striking that liquidity is maintained at a very high level. What's more, almost all banks have reason to talk about excess liquidity. With a required regulatory norm of the *Liquidity Coverage Ratio (LCR)* indicator not lower than 100%, its average values for the analyzed banks vary between 349% for 2020 and 371% for 2021, i.e. they are several times higher than the minimum requirements. Fig. 6 reflects the distribution of the liquidity coverage ratio according to the size of the banks. The correlation coefficient

between them (-0.40 for 2020 and -0.37 for 2021) expresses the presence of a moderate negative relationship between the size of banks and their liquidity. Therefore, there is reason to consider a regularity, according to which the smaller credit institutions of the second group prefer greater security at the expense of profitability and tend to maintain a higher level of liquidity (the average values of the coefficient of liquid coverage for them are 392 % for 2020 and 416% for 2021). On the contrary, as for the big banks of the first group, the liquidity coverage ratio is relatively lower (255% for 2020 and 272% for 2021). This fact corresponds to the conclusion made above that the return on assets (ROA) of the former is at the same time lower compared to that of the latter.

2020 (Correlation coefficient -0,40)   2021 (Correlation coefficient -0,37)

Fig. 6. Liquidity coverage ratio depending on the size of the banks.

The degree of capitalization also reflects the risk profile of the activity. Bulgaria's banking system is well capitalized. This conclusion is supported by the relatively high values of the capital coverage of the risk through the *Total Capital Ratio (TKR)* indicator. The average capital adequacy of the banks of the first and second groups during the two analyzed years varies around 21%, while for the five big banks of the first group it is around 23%, and for the rest of the smaller banks – around 20%. The conclusion made is also confirmed by the analysis of the

data in Fig. 7. It is clear from it that there is a moderately positive correlation between the capital adequacy of banks and their size (the correlation coefficient is 0.43 for 2020 and 0.48 for 2021). Therefore, there is reason to believe that big banks in the country have better capitalization compared to smaller ones. This is understandable considering that the former are subject to higher regulatory capital norms by requiring them to maintain an additional capital buffer for systemically important credit institutions.

2020 (Correlation coefficient 0,43)   2021 (Correlation coefficient 0,48)
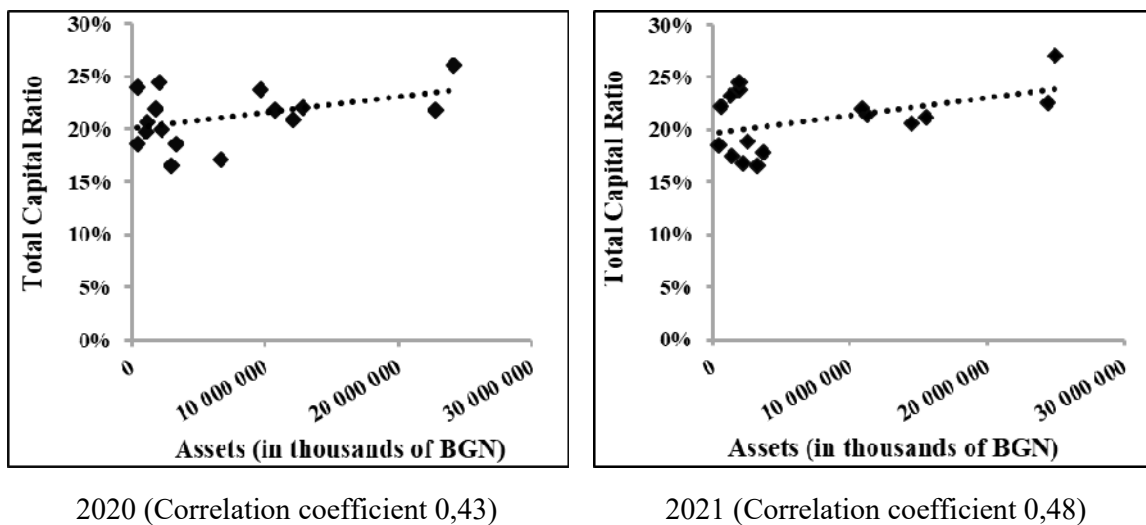
Fig. 7. Capital adequacy depending on the size of the banks.

Conclusions.

The above allows us to make relevant generalizations regarding the working hypotheses formulated at the beginning. The first hypothesis, according to which the size of the credit institutions in Bulgaria does not have a significant impact on their financial indicators, is not confirmed. The results of the research show that the size of the banks in the country practically does not have a significant impact only on the risk profile of their activity. This is understandable, bearing in mind that credit institutions in Bulgaria, regardless of the scale of their activity, have for a long time pursued a relatively moderate and cautious banking policy, avoiding taking on excessive or unnecessary risks. Our research proves the second hypothesis – for the rest of the indicators that were analyzed, a strong or moderate dependence between the size of the banks and the state of their financial indicators is outlined. This dependence is most strongly expressed in terms of return on assets (ROA). Large credit institutions generate a much higher return on their assets.

This puts them at an advantage over smaller ones. On the one hand, we have found that the banks in Bulgaria have approximately the same risk profile, but on the other hand, the former realize higher profitability than the latter. Obviously, the balancing of the "yield - risk" dilemma at the big banks seems much more optimal. Analogous conclusions can be drawn regarding the other financial indicators that were studied – efficiency of administrative costs, productivity of bank staff, quality of assets, liquidity coverage ratio and capital adequacy. Their values at credit institutions with a wider scale of activity are predominantly better, which gives them visible advantages over smaller banks.

On this basis, there is reason to claim that one of the possible instruments for increasing the efficiency of the banking sector in the country is its further consolidation. Of course, the conclusions drawn are not universal. They reflect the specifics of the banking industry in Bulgaria and the specifics of the period to which the analyzed data refer.

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