Influence of the Scale Effect Upon the Financial Results of the Banks in Bulgaria

Zhelyo Vatev Vatev,
"D.A. Tsenov" Academy of Economics, Svishtov, Bulgaria
http://orcid.org/0000–0001–8731–4675

Abstract. The object of attention in the article is the profitability and efficiency of the banks in Republic of Bulgaria. The subject of the development focuses onto the influence of the credit institutions size upon their financial results. The objective of this study is to either to reveal that there are sufficient grounds to believe that the effect of the scale renders its influence upon the profitability and efficiency indicators or such a dependency can hardly be found. This study comprises observations about the processes in the banking sector of the country for the period 2007–2016. A coefficient analysis was employed, using a system of indicators suitably selected to this end. Certain dependency between the size of the banks in Bulgaria and the values of these financial indicators was established on the basis of the analysis of the real empirical data. It was concluded that utilizing the scale effect influence the large credit institutions manage to derive certain advantages in comparison to the smaller in size banks. The idea that by means of further consolidation of the banking sector of the country its efficiency can be increased, was substantiated.
Keywords: banks; banking system; size of banks; economies of scale; banking sector consolidation

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Влияние эффекта масштаба на финансовые результаты банков в Болгарии

Ж.В. Вытев,
Хозяйственная академия им. Д.А. Ценова, г. Свищов, Республика Болгария
http://orcid.org/0000–0001–8731–4675

Аннотация. Объектом внимания в данной статье являются доходность и эффективность банков в Республике Болгария. Предмет разработки фокусируется на влиянии размера кредитных организаций на их финансовые результаты. Цель исследования — выявить, существуют ли основания полагать, что эффект масштаба оказывает влияние на показатели прибыльности и эффективности, или такую зависимость может быть трудно установить. Исследование охватывает наблюдения процессов в банковском секторе страны на период 2007–2016 гг. При этом применяется коэффициентный анализ, причем используется система показателей, подобранных подходящим образом специально для этой цели. На основе анализа реальных эмпирических данных была установлена определенная зависимость между размерами банков в Болгарии и значениями их финансовых показателей. По результатам исследования можно сделать вывод, что крупные кредитные организации, используя действие эффекта масштаба, имеют возможность извлечь определенные преимущества в сравнении с меньшими по размеру банками. Таким образом, обосновывается идея, что путем дальнейшего укрупнения банковского сектора страны может быть достигнуто повышение его эффективности.
Ключевые слова: банки; банковская система; размер банков; эффект масштаба; консолидация банковского сектора

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INTRODUCTION

One of the main criteria for classification of the banks in a country is according to their size. Reviewing the reference literature shows that the question of the relative advantages and disadvantages of the large and the smaller in size banks is debatable [5–7]. As an advantage for the large-size credit institutions was pointed out the fact that the considerable scale of the activity contributes to offering of a wider range and more diverse products, helps in diversification of the bank portfolios and in avoidance of excessive concentrations. Large banks are considered more competitive and more sensitive to innovations in the financial industry. Their policy is usually oriented towards more risky, but highly profitable investments, and they are better adaptable to the respective regulatory requirements. It is traditionally assumed that in any critical situation, the probability for the state to support a large-size bank is greater than if it was about saving of a smaller bank ("too big to fail"). The following disadvantages of the large banks are pointed out: greater inertness of the banking activity, harder adaptability to changes of the external conditions, more complex and more expensive management, more limited interest in servicing small customers, danger of taking greater risks, related to the large-scale transactions. On the other hand, the smaller banks also have their advantages — greater flexibility, easier adaptability to abrupt changes of environment, more simplified management, striving towards more moderate and balanced policy, etc. Concerning their disadvantages, they are usually related to the limitations in provision of large credits and servicing big customers, difficulties in diversification of the operations, harder access to the financial markets, etc.

To a certain extent, the outlined comparative advantages and disadvantages of the large and smaller banks have more general nature. It is another question to what extent these can be substantiated by empirical data and what is their exact manifestation on the background of the specifics of the bank industry in the respective country.

The object of attention of this article is the financial results of the banks in Republic of Bulgaria. *The subject* of the development is directed towards the intensity and the direction of influence of the factor of bank size upon these financial results. *The objective* of the study is to establish whether the effect of the scale renders its influence upon the profitability and the efficiency of the banks in Bulgaria or such dependency can hardly be found.

Two *work hypotheses* will be formulated for the needs of this study:

- *First hypothesis* — the size of the banks in Bulgaria virtually renders no influence upon their financial results. The core of it consists in the fact that the effect of the scale renders no significant effect upon the commercial viability and the efficiency of the credit institutions so, from this point-of-view "size does not matter";
- *Second hypothesis* — there is a certain dependency between the size of the banks in Bulgaria and the status of a series of their key indicators, reflecting the final financial results from the banking activity. According to this hypothesis, the effect of the scale renders significant effect the last, meaning that for the banks in the country "size does matter".

METHODOLOGY AND DATA

In the beginning, a reasoning of the criterion, which will be the basis to determine the bank size, should be provided. Different points-of-view can also be used to quantify their size. Nevertheless, the conventional criterion to judge the magnitude of the credit institutions is the *asset size* [6, 7]. We assume that the sum of assets is the most precise expression of the scale and scope of the banking activity.

To outline the tendencies in the financial sector, Bulgarian National Bank (BNB) divides the banks in Bulgaria according to their size into three categories. The first group comprises the five biggest banks in terms of the sum of their assets, whichever they may be as at any given moment. The second group includes the remaining small and medium-sized banks. A separate, third group comprises the branches of foreign banks in Bulgaria. The present study is based on this officially accepted classification. Further down, our attention focuses upon the financial results of the banks from the first group (the five largest banks) and the banks from the second group (the rest of the small and medium-sized banks). Due to certain specifics of the activity of foreign bank branches in the country (the ones from the third group), these have been intentionally not included in this study.

The dependency between the size of the banks, grouped into the two mentioned categories and some of their key financial indicators of profitability and efficiency, is to be analysed on the above grounds. Coefficient analysis is employed by using a system of indicators, selected in accordance with the above outlined guideline of the study. To be more precise, the focus was placed on the following:

- *Cost-income ratio*. It expresses what part of the bank income covers the respective expenses and what part of the income remains to set up the net financial result [2], i.e.

$$\text{Cost} - \text{income ratio} = \frac{\text{Sum of expenses}}{\text{Sum of income}}.$$

Its values decrease with the increasing of the income and/or decreasing of the expenses, which is a favourable situation. Due to its complex nature the cost-income "scissors" is often used to evaluate the efficiency of the credit institutions.

- *Operating efficiency*. Key importance for establishing the income and expenses will have the operating ones, which are related to the main (typical) for the banks activities. Therefore, the operating expenses and income have sustainable nature and are constantly occurring. These are: interest expenses/income, received/paid fees and commissions, expenses/income from foreign currency transactions, from securities transactions, etc. The ratio of the considered expenses and income, renders its significant effect upon the so-called operating efficiency [6]:

$$\text{Operating efficiency} = \frac{\text{Operating expenses}}{\text{Operating income}}.$$

Lower values of the indicator (related to reduction of the operating expenses and/or increase of the operating income) are an indication of an increasing efficiency. The difference between the operating income and expenses expresses the net operating income.

- *Net interest margin*. The difference between the income and expenses for interests gives us the concentrated expression of the efficiency of the bank's intermediary operation. For comparison, the net interest income is used by its relative value against the assets [1]:

$$\text{Net interest margin} = \frac{\text{Interest income} - \text{Interest expenses}}{\text{Assets}} = \frac{\text{Net interest income}}{\text{Assets}}.$$

This gives an idea of the efficiency of the active banking operations (their interest income), though not in themselves, but depending on the price of the resources attracted.

- *Efficiency ratio*. This popular financial indicator for evaluation of the commercial viability and efficiency of the credit institutions is based on the fact that the banking profits obtained from the sum of the net interest income and the other non-interest income after deduction of the respective non-interest expenses. In this particular case, we are based on the circumstance that usually, for the banks the non-interest expenses are larger than the non-interest income, i.e. for them the net non-interest income has negative value [6]. This necessitates that the interest income should have such an amount that the interest expenses will be recovered so that on the one hand, the remainder of them will be covered by those non-interest expenses, which have not be covered by the non-interest income, and on the other hand — to be sufficient so as to form certain profit. These deductions find their quantity expression in the following dependency [4]:

$$\text{Efficiency ratio} = \frac{\text{Noninterest expenses}}{\text{Net interest income} + \text{Noninterest income}}.$$

For example, if the efficiency ratio is 0,70, this means that 70% of the net interest income and the other (non-interest) income will cover the non-interest expenses, and the remaining 30% will be used to form up the profit. Lower levels of this indicator correspond to higher values of the indicators for commercial viability.

- *Non-operating expenses per unit of net operating income*. The management of the non-operating expenses and the control of their dynamics and structure are of considerable importance for the bank management. These include: administrative and management expenses, amortisations, provisions, rental payments, fines, etc. [3]. Due to its non-production nature, the increase of the latter ones represents an additional weight on the final financial result. For the needs of the comparative analysis, these are interpreted as relative quantity. The present study uses as a basis the size of the net operating income of the banks, i.e.

$$\text{Non}-$$
$$-\text{ operating expenses per unit of net operating income} =$$
$$= \frac{\text{Non}-\text{operating expenses}}{\text{Net operating income}}.$$

The non-operating expenses per unit of net operating income decrease with the decreasing the non-operating expenses and/or with the increasing of the net operating income. This situation will be favourable, if the values of the coefficient are comparatively lower when compared to the other banks or a decrease tendency is observed. Otherwise, this may suggest excessive staff employment, inefficient management policy, deterioration of the quality of assets, etc.

• *Administrative expenses per unit of assets.* Administrative expenses have their significant weight in forming up of the non-operating expenses. These are unavoidable, but their keeping the unreasonably large will render negative effect on the profit and efficiency of the banking activity. As a relative quantity, these are often expressed as a percentage against the assets:

$$\text{Administrative expenses per unit of assets} =$$
$$= \frac{\text{Administrative expenses}}{\text{Sum of the bank assets}}.$$

Generally, the reduction of the values of this coefficient means higher efficiency. The situation is not favourable, if for a certain period the increase of the administrative expenses exceeds the one of the assets or if against the increasing of the former ones, a reduction of the latter ones is observed.

• *Net profit per unit of staff expenses.* The dependency between the banking profit and the staff expenses (wages, social security payments, etc.) bears valuable information from the human factor utilization point-of-view, i.e. [4]

$$\text{Net profit per unit of staff expenses} =$$
$$= \frac{\text{Net profit}}{\text{Staff expenses}}.$$

The indicator expresses the contribution of the staff to the final financial result.

• *Return on Assets (ROA).* Gives an idea of the amount of the bank profit, distributed per unit of assets [6]:

$$\text{Return on Assets} = \frac{\text{Net profit}}{\text{Sum of assets}}.$$

Using this indicator is appropriate for the purposes of the present study, because the profit is a result from the overall banking activity, and assets best reflect its scope and scale.

On the basis of the financial indicators presented, we performed comparative analysis between the two groups of banks in Bulgaria, classified according to their size: the banks from the first group (the large banks) and the banks from the second group (small and medium-sized banks). The idea is to establish the dependency between the size of the credit institutions and their financial results.

This study comprises observations about the development of the banking sector in Bulgaria for a period of ten years (2007–2016). Several considerations played an importance role for the selection of the time interval. First, studying data about a longer period contributes to the better outlining the typical patterns in the manifestation of the scale effect upon the banks' financial results. Furthermore, this way the influence of some factors, which have a short-lived, temporary or accidental nature will be ignored. Second, from the point-of-view of the effect of the financial crisis upon the banking activity, the analysed period included three relatively differentiated stages: pre-crisis period (from 2007 to 2009), crisis period (from 2009 to 2014) and post-crisis period (after 2014). This allows for a more precise outlining of certain specifics of the dynamics of the processes in the banking sphere, during each individual stage.

The conclusions from this study are based on the officially published information by the Bulgarian National Bank on the status of the banking sector in the country.

EMPIRICAL RESULTS

Our further development specifies the testing of the formulated work hypotheses by means of an analysis of the real empirical data on the condition of the banking sector in Bulgaria.

Let us first begin by presenting the most popular of the indicators considered — the *cost-income ratio*. The data show that in the years before the occurrence of the economic crisis, the expenses on the banking system level were continuously on the rise. This is logical taking into account the increasing activity of the credit institutions (*table 1*). Nevertheless, the expenses were completely offset by the

Table 1

Ratio between the expenses and income of the banks in Bulgaria depending on their size*

Year	Sum of expenses (in thousands of BGN)			Sum of income (in thousands of BGN)			Cost-income ratio		
	Large banks	Small banks	Banking system	Large banks	Small banks	Banking system	Large banks	Small banks	Banking system
2007	1 844 720	1 338 374	3 312 864	2 614 900	1 680 626	4 456 422	0,71	0,80	0,74
2008	2 592 266	1 810 848	4 598 547	3 585 209	2 180 919	5 985 296	0,73	0,83	0,77
2009	3 139 947	2 076 809	5 458 969	3 675 847	2 348 995	6 239 161	0,85	0,88	0,87
2010	3 133 509	2 185 932	5 582 100	3 575 635	2 406 498	6 198 763	0,88	0,91	0,90
2011	2 945 852	2 427 016	5 610 977	3 379 541	2 600 419	6 197 118	0,87	0,93	0,91
2012	2 950 492	2 434 556	5 590 060	3 343 397	2 601 741	6 157 538	0,88	0,94	0,91
2013	2 727 362	2 531 798	5 372 100	3 236 701	2 599 140	5 956 967	0,84	0,97	0,90
2014	2 743 283	1 791 796	4 706 419	3 333 558	1 940 220	5 452 732	0,82	0,92	0,86
2015	2 505 794	1 738 225	4 376 276	3 243 282	1 913 770	5 274 706	0,77	0,91	0,83
2016	2 220 067	1 458 849	3 747 544	3 115 118	1 824 864	5 009 878	0,71	0,80	0,75

Source: author's own calculations based on data from URL: http://www.bnb.bg (accessed: 12.06.2017).

* *Note:* The values in the present and all following tables, referring to the banking system as a whole, include data not only for the banks of the first group (large banks) but also of the second group (smaller banks), along with ones concerning the activities of the banks of the third group (i.e. branches of foreign banks in the country).

income, which during this stage had a front-running growth rate. The consequences from the crisis after 2008 rendered negative effect upon the profitability of the banks. The thinning growth of the income in the crisis conditions forced them, as much as possible, to restrict their expenses. The cost-income "scissors" of the banking sector was gradually closing. The dynamics of cost-income ratio outlined a negative tendency — the total value for the sector marked a palpable increase from 0,74 in 2007 to 0,90 in 2013. It was only in the last years that there were some symptoms of overcoming of this negative dynamics. At the end of 2016, it almost restored its 2007 levels. The outlined tendency refers not only to the banking system as a whole, but also to most banks, regardless of their size. In the same time, the comparative analysis reveals structural differences, observed in the banks with difference scale of activity. The large vaults of first group are in a more favourable position — despite the worsened economic conditions, they maintained the income-to-expense ratio to a higher level in comparison with the smaller in size banks from the second group, or against the respective values for the banking sector, as a whole, respectively. On the average, for the ten-year period, it was 0,81 for the large-size institutions, while for the smaller-size ones it was 0,89. The outlined advantage of the larger banks in this aspect appears as a permanent tendency — it has been observed for the entire period analysed.

As to the *operating efficiency coefficient* (Operating expenses / Operating income), it is important to note that until 2013 it reported a constant deterioration both, for the banking system, and for the individual bank groups (*table 2*). Operating expenses increase at a quicker pace than the operating income. Interest expenses rendered the most significant effect upon this negative tendency. The fierce deposit competition and the popular "deposit tourism" between the banks, typical for the years of the crisis, found their expression in the aggressive interest policy carried out by them in the collection of deposits and in the maintenance of high deposit interest rates. This inertia was overcome after 2013. For the period

Table 2

Dynamics of the operating expenses and the operating income of the banks in Bulgaria according to their size

Year	*Operating expenses (in thousands of BGN)*			*Operating income (in thousands of BGN)*			*Operating efficiency*		
	Large banks	*Small banks*	*Banking system*	*Large banks*	*Small banks*	*Banking system*	*Large banks*	*Small banks*	*Banking system*
2007	698 083	605 810	1 369 158	2 613 900	1 680 624	4 453 407	0,27	0,36	0,31
2008	1 250 997	908 028	2 257 460	3 567 788	2 179 817	5 967 807	0,35	0,42	0,38
2009	1 367 492	991 370	2 420 886	3 643 353	2 348 995	6 213 036	0,38	0,42	0,39
2010	1 149 262	1 035 454	2 259 163	3 568 382	2 406 481	6 191 493	0,32	0,43	0,36
2011	1 085 644	1 115 445	2 268 522	3 365 370	2 600 419	6 182 947	0,32	0,43	0,37
2012	1 114 725	1 171 702	2 325 376	3 326 929	2 601 741	6 141 070	0,34	0,45	0,38
2013	1 230 573	1 022 500	2 238 834	3 236 701	2 590 205	5 948 282	0,38	0,39	0,38
2014	838 519	647 709	1 528 341	3 333 558	1 920 497	5 432 939	0,25	0,34	0,28
2015	563 615	507 991	1 070 751	3 237 289	1 913 770	5 268 713	0,17	0,27	0,20
2016	509 844	403 987	923 702	3 114 392	1 818 918	5 003 206	0,16	0,22	0,18

Source: author's own calculations based on data from URL: http://www.bnb.bg (accessed: 12.06.2017).

from 2013 to 2016 inclusive, the operating expenses were reduced by impressive rates — more than twice. They reached levels far lower than in comparison with the ones in 2007. This was basically due to the drastic lowering of the interest expenses. The interest rates for the bank deposits in these years dropped substantially. Indeed, there were indications of certain decrease of the operating income in this period, but it was considerably smaller than the one of the operating expenses. Most of the stability of the operating income was substantiated by two circumstances. Firstly, the interest rates on the credits remained at a comparatively high level. The banking competition was redirected from deposit collection towards credit provision activity. Secondly, the significance of the income from fees and commissions, as an element of the operating income, increased. In these two aspects, the large banks demonstrated certain advantages in comparison with the rest. On the one hand, they managed to maintain higher interest rates on the credits, and on the other hand — offering wider range of services, they increased their income from fees and commissions. This data allowed us to draw the conclusion that as a whole, the large-size credit institutions have better operating efficiency when compared to the smaller size ones.

The general tendency is that under the conditions of crisis the banks in the country should operate with decreasing net interest income. The latter one gradually stabilizes only in the years after coming out of the crisis (*table 3*). At the same time, during the analysis of the data on the dynamics of *the net interest margin*, considerable differences between the large and the smaller banks were found. The advantage is mainly to the benefit of the former ones — they operate at considerably higher interest margin than the rest. The main reasons for it being the circumstance that for the analysed period the large banks in Bulgaria managed to maintain higher interest rates on the credits and lower ones on the deposits, and attract more customers, at the same time. This finding may appear illogical, but it has its reasoning: a) the large-size banks enjoy greater

Table 3

Net interest margin of the banks in Bulgaria in accordance with their size

Year	*Net interest income (in thousands of BGN)*			*Assets (in thousands of BGN)*			*Net interest margin*		
	Large banks	*Small banks*	*Banking system*	*Large banks*	*Small banks*	*Banking system*	*Large banks*	*Small banks*	*Banking system*
2007	1 369 946	740 614	2 171 581	33 400 697	22 786 572	59 089 503	4,10%	3,25%	3,68%
2008	1 767 371	925 044	2 787 632	39 748 006	26 000 037	69 560 455	4,45%	3,56%	4,01%
2009	1 766 764	976 380	2 847 031	41 076 648	26 208 651	70 184 446	4,30%	3,73%	4,06%
2010	1 868 641	963 901	2 917 234	40 171 228	29 995 864	73 724 696	4,65%	3,21%	3,96%
2011	1 709 854	1 056 757	2 868 973	39 730 860	33 602 309	76 811 182	4,30%	3,14%	3,74%
2012	1 521 921	978 969	2 625 479	40 812 865	36 024 702	82 415 660	3,73%	2,72%	3,19%
2013	1 354 834	1 095 206	2 540 914	42 511 878	37 811 402	85 746 670	3,19%	2,90%	2,96%
2014	1 675 831	875 389	2 572 446	46 183 296	32 945 623	85 134 799	3,63%	2,66%	3,02%
2015	1 745 858	954 943	2 771 123	50 157 997	33 995 963	87 524 257	3,48%	2,81%	3,17%
2016	1 792 987	990 097	2 805 106	52 771 169	37 110 171	92 094 979	3,40%	2,67%	3,05%

Source: author's own calculations based on data from URL: http://www.bnb.bg (accessed: 12.06.2017).

popularity; b) they are in a position to generate greater confidence in themselves, and become centre of attraction for more customers; c) they own a well-developed branch network; d) they are in a position to provide users with both traditional credit and deposit products, along with a wider range of other services, meeting their individual needs.

The consequences from the economic crisis in the country rendered negative effect on the *coefficient of efficiency* (*table 4*). The negative tendency is well expressed after 2008 and continues until 2013. The reason for this takes its root in the circumstance that the increase of the non-interest expenses happens at a quicker pace than the net interest income and the noninterest income. The growth of the non-interest expenses originated mainly from the deterioration of the quality of the bank credit portfolios, causing significant increase of the expenses for provisions against their devaluation. It was only in the last three years (2014–2016) that the efficiency ratio altered its negative trend, though still far from the levels, which were typical for 2007 and 2008. However, we should note the fact that from the point-of-view of the considered indicator, the large banks from the first group are in a more favourable position in comparison with the small and medium-sized banks from the second group. This pattern was manifested during the whole analysed period. The average value of the efficiency ratio for the period 2007–2016 for the first group was 0,74, while for the second group it was 0,84. In this sense, the large banks of the sector demonstrated greater efficiency in comparison with the rest.

The analysis shows that *the non-operating expenses* take up a large relative share from the total sum of expenses of the banks in Bulgaria. If we compare data from *table 5* and *table 1*, we will find out that over the individual years, it varied between 60% and 75%. It is interesting to note that the non-operating expenses exceed even the size of interest expenses. These facts contribute to the particular importance of the control upon the non-operating type of expenses. The non-operating expenses represented as ratio against the quantity of the net operating income, show multidirectional development trends (*table 5*). Under the unfavourable crisis conditions for the period 2009–2012 the indicator continuously deteriorated. The conclusion refers to the banking

Table 4

Efficiency ratio of the banks in Bulgaria according to their size

Year	*Noninterest expenses (in thousands of BGN)*			*Net interest income (in thousands of BGN)*			*Noninterest income (in thousands of BGN)*			*Efficiency ratio*		
	Large banks	*Small banks*	*Banking system*	*Large banks*	*Small banks*	*Banking system*	*Large banks*	*Small banks*	*Banking system*	*Large banks*	*Small banks*	*Banking system*
2007	1 213 778	781 311	2 064 957	1 369 946	740 614	2 171 581	614 012	382 949	1 036 934	0,61	0,70	0,64
2008	1 431 559	949 362	2 468 178	1 767 371	925 044	2 787 632	657 131	394 389	1 067 295	0,59	0,72	0,64
2009	1 846 731	1 129 327	3 144 510	1 766 764	976 380	2 847 031	615 867	425 133	1 077 671	0,78	0,81	0,80
2010	2 038 960	1 197 266	3 428 338	1 868 641	963 901	2 917 234	612 445	453 931	1 127 767	0,82	0,84	0,85
2011	1 911 687	1 367 875	3 450 695	1 709 854	1 056 757	2 868 973	635 522	484 521	1 167 863	0,82	0,89	0,85
2012	1 897 971	1 337 565	3 399 138	1 521 921	978 969	2 625 479	768 955	525 781	1 341 137	0,83	0,89	0,86
2013	1 560 904	1 660 189	3 292 759	1 354 834	1 095 206	2 540 914	715 409	632 325	1 336 712	0,75	0,96	0,85
2014	2 020 210	1 225 078	3 374 267	1 675 831	875 389	2 572 446	934 654	498 113	1 548 134	0,77	0,89	0,82
2015	2 074 250	1 310 106	3 496 519	1 745 858	954 943	2 771 123	1 065 880	530 708	1 623 826	0,74	0,88	0,80
2016	1 948 894	1 224 973	3 2367 65	1 792 987	990 097	2 805 106	1 050 958	600 891	1 693 993	0,69	0,77	0,72

Source: author's own calculations based on data from. URL: http://www.bnb.bg (accessed: 12.06.2017).

system level, and to the individual groups of banks. In this period the non-operating expenses increased faster when compared to the net operating income. The significant increase of expenses for provisions against credit devaluation rendered strong negative pressure in the analysed aspect, originating from the deterioration of their quality (of the credits). It was only in the last years that the non-operating expenses per unit of net operating income gradually outlined the favourable tendency towards reduction. In the same time, if the attention is drawn to the values of the analysed indicator, which are characteristic about banks of different size, certain differences become evident. The large banks from the first group are in more favourable position. For them, the non-operating expenses per unit of net operating income for the entire period analysed are lower in comparison with the ones of the smaller banks from the second group (the average values of the indicator for the period for the first ones is 0,73, and for the others — 0,83). It is noteworthy that only for the period from 2007 to 2013 the non-operating expenses of the banks from the first group marked a growth of about 30%, while for the ones from the second group this increase reached more than 100%. Therefore, this data confirm that the influence of the scale effect is more tangible even concerning the non-operating expenses.

The effect from the achieving of economies of scale is particularly well pronounced against *the administrative expenses*. The data in *table 6* show that in this aspect, the large banks in Bulgaria enjoy a marked supremacy. In 2016 when compared to the basis 2007, the expenses of administrative nature of the large banks increased by 13% (while assets' growth was 58% for this interval of time). As to the small and medium-sized banks, this growth rate for the same period is significantly higher — 36% (while assets' growth was 63%). In other words, it is typical for the large-size banks that the assets' growth is accompanied by relatively smaller increase of the administrative expenses in comparison with the smaller banks. This reflects on the *rate of the administrative expenses per unit of assets* for both groups of credit institutions. The pattern, which is clearly distinguished, is that the banks from the first group will continuously report lower percentage of administrative expenses related to the assets when

Table 5

Non-operating expenses per unit of net operating income of the banks in Bulgaria depending on their size

Year	*Non-operating expenses (in thousands of BGN)*			*Net operating income (in thousands of BGN)*			*Non-operating expenses to net operating income*		
	Large banks	*Small banks*	*Banking system*	*Large banks*	*Small banks*	*Banking system*	*Large banks*	*Small banks*	*Banking system*
2007	1 146 637	732 564	1 943 706	1 915 817	1 074 814	3 084 249	0,60	0,68	0,63
2008	1 341 269	902 820	2 341 087	2 316 791	1 271 789	3 710 347	0,58	0,71	0,63
2009	1 772 455	1 085 439	3 038 083	2 275 861	1 357 625	3 792 150	0,78	0,80	0,80
2010	1 984 247	1 150 478	3 322 937	2 419 120	1 371 027	3 932 330	0,82	0,84	0,85
2011	1 860 208	1 311 571	3 342 455	2 279 726	1 484 974	3 914 425	0,82	0,88	0,85
2012	1 835 767	1 262 854	3 264 684	2 212 204	1 430 039	3 815 694	0,83	0,88	0,86
2013	1 496 789	1 509 298	3 133 266	2 006 128	1 567 705	3 709 448	0,75	0,96	0,84
2014	1 904 764	1 144 087	3 178 078	2 495 039	1 272 788	3 904 598	0,76	0,90	0,81
2015	1 942 179	1 230 234	3 305 525	2 673 674	1 405 779	4 197 962	0,73	0,88	0,79
2016	1 710 223	1 054 862	2 823 842	2 604 548	1 414 931	4 079 504	0,66	0,75	0,69

Source: author's own calculations based on data from URL: http://www.bnb.bg (accessed: 12.06.2017).

Table 6

Administrative expenses against the sum of assets of the banks in Bulgaria according to their size

Year	*Administrative expenses (in thousands of BGN)*			*Assets (in thousands of BGN)*			*Percentage of administrative expenses against assets*		
	Large banks	*Small banks*	*Banking system*	*Large banks*	*Small banks*	*Banking system*	*Large banks*	*Small banks*	*Banking system*
2007	722 778	528 130	1 304 375	33 400 697	22 786 572	59 089 503	2,16%	2,32%	2,21%
2008	884 718	692011	1 657 904	39 748 006	26 000 037	69 560 455	2,23%	2,66%	2,38%
2009	864 528	712 136	1 683 282	41 076 648	26 208 651	70 184 446	2,10%	2,72%	2,40%
2010	860 363	723 869	1 691 376	40 171 228	29 995 864	73 724 696	2,14%	2,41%	2,29%
2011	863 815	765 071	1 731 662	39 730 860	33 602 309	76 811 182	2,17%	2,28%	2,25%
2012	870 541	779 643	1 755 073	40 812 865	36 024 702	82 415 660	2,13%	2,16%	2,13%
2013	789 212	895 863	1 783 370	42 511 878	37 811 402	85 746 670	1,86%	2,37%	2,08%
2014	906 132	731 717	1 737 773	46 183 296	32 945 623	85 134 799	1,96%	2,22%	2,04%
2015	990 284	757 062	1 850 151	50 157 997	33 995 963	87 524 257	1,97%	2,23%	2,11%
2016	816 877	716 097	1 587 481	52 771 169	37 110 171	92 094 979	1,55%	1,93%	1,72%

Source: author's own calculations based on data from URL: http://www.bnb.bg (accessed: 12.06.2017).

Table 7

Profit per unit of staff expenses of the banks in Bulgaria depending on their size

Year	Net profit (in thousands of BGN)			Staff expenses (in thousands of BGN)			Net profit per unit of staff expenses		
	Large banks	Small banks	Banking system	Large banks	Small banks	Banking system	Large banks	Small banks	Banking system
2007	770 180	342 252	1 143 558	299 899	218 976	540 052	2,57	1,56	2,12
2008	992 943	370 071	1 386 749	384 113	287 906	706 056	2,59	1,29	1,96
2009	535 900	272 186	780 192	368 261	292 925	698 980	1,46	0,93	1,12
2010	442 126	220 566	616 663	368 132	293 024	700 955	1,20	0,75	0,88
2011	435 235	172 763	586 141	357 047	326 387	722 811	1,22	0,53	0,81
2012	395 982	166 556	566 842	358 528	331 680	728 601	1,10	0,50	0,78
2013	509 339	67 342	584 867	313 967	384 922	735 300	1,62	0,17	0,80
2014	590 275	148 424	746 313	369 745	313 788	720 916	1,60	0,47	1,04
2015	737 488	175 545	898 430	392 511	308 253	737 218	1,88	0,57	1,22
2016	895 051	366 015	1 262 334	397 771	341 010	755 238	2,25	1,07	1,67

Source: author's own calculations based on data from URL: http://www.bnb.bg (accessed: 12.06.2017).

compared to the ones from the second group. Concerning the staff expenses on the banking system level, it can be noted that during the analysed period, these showed a tendency of slight increase (*table 7*). The analysis showed the presence of variable internal structural changes, brought about by the multidirectional influence of the two categories of banks, grouped according to their size. This finding was particularly well outlined for the period from 2008 to 2013. During this period, the banks from the first group (the large banks) reported reduction of staff expenses by 18% (from 384113 thousands of BGN to 313967 thousands of BGN). For the ones from the second group (the smaller banks), the reverse trend was found — they increased by 34% (from 287 906 thousands of BGN to 384 922 thousands of BGN). Considering this, it is no wonder that from the point-of-view of the efficiency, expressed through *the quantity of the net profit, distributed per unit of staff expenses*, the large banks in the country enjoy an impressive supremacy. On the average, for the period 2007–2016, the net profit per unit of staff expenses for them (1,75) is two times greater when compared to the one of the smaller banks (0,78). The influence of the scale effect is more tangible — against the staff expenses incurred by the banks from the first group, the latter ones generate two times greater profit in comparison with the one from the second group.

Achieving of sufficient and increasing profit is a priority task for each credit institution. The data presented about the dynamics of the net profit of the bank system in Bulgaria for the period 2007–2016 (*table 8*) show that during this interval of time three stages can be outlined. Until 2009 the profits of the sector increases by substantial amounts. The reason is the fast economic growth and the credit boom in the country during that period. The crisis after 2008 rendered its negative effect on the activity of the banks, the sign for which was the constant melting of their profit. Only for the period from 2008 to 2012 the latter one decreased more than twice

Table 8

Return on Assets (ROA) of the banks in Bulgaria depending on their size

Year	*Net profit (in thousands of BGN)*			*Assets (in thousands of BGN)*			*Return on Assets (ROA) — %*		
	Large banks	*Small banks*	*Banking system*	*Large banks*	*Small banks*	*Banking system*	*Large banks*	*Small banks*	*Banking system*
2007	770 180	342 252	1 143 558	33 400 697	22 786 572	59 089 503	2,31%	1,50%	1,94%
2008	992 943	370 071	1 386 749	39 748 006	26 000 037	69 560 455	2,50%	1,42%	1,99%
2009	535 900	272 186	780 192	41 076 648	26 208 651	70 184 446	1,30%	1,04%	1,11%
2010	442 126	220 566	616 663	40 171 228	29 995 864	73 724 696	1,10%	0,74%	0,84%
2011	435 235	172 763	586 141	39 730 860	33 602 309	76 811 182	1,10%	0,51%	0,76%
2012	395 982	166 556	566 842	40 812 865	36 024 702	82 415 660	0,97%	0,46%	0,69%
2013	509 339	67 342	584 867	42 511 878	37 811 402	85 746 670	1,20%	0,18%	0,68%
2014	590 275	148 424	746 313	46 183 296	32 945 623	85 134 799	1,28%	0,45%	0,88%
2015	737 488	175 545	898 430	50 157 997	33 995 963	87 524 257	1,47%	0,52%	1,03%
2016	895 051	366 015	1 262 334	52 771 169	37 110 171	92 094 979	1,70%	0,99%	1,37%

Source: author's own calculations based on data from URL: http://www.bnb.bg (accessed: 12.06.2017).

(from 1 386 749 thousands of BGN for 2008 to 566 842 thousands of BGN for 2012). It was only after 2012, when a positive tendency towards increase of the final financial result of the credit institutions was noted, and in 2016 it reached the levels from the pre-crisis period (1 262 334 thousands of BGN). The particular factors affecting the profit during the individual years had multi-directional effect. The most contradictory is the effect of the interest income. Until 2009, the bank profits were mainly supported by the considerable interest income. Under the conditions of the crisis, due to the reduction of the volumes and the decrease of the interest rates on credit provisions, the interest income continuously dropped, which rendered its negative effect on the financial results. The interest expenses had strong impact in negative direction over the first two years of the analysed period. At the same time, this influence was not so tangible, as it was completely offset by the increasing interest income. For the next years its negative impact is insignificant, and after 2013 — even positive (the interest rates on the deposits were perceptibly reduced, and respectively, the interest expenses were reduced). The only factor of permanent positive effect for almost the whole analysed period was the non-interest income. For most of the years though, its effect was not very notable. As to the non-interest expenses, they are constantly rendering negative impact on the profits, mostly, due to the deterioration of the quality of the bank credit portfolios and the increasing of the expenses for provisions against their devaluation. This factor had its strongest negative impact during the first years of the analysed period. The stabilization of the profits at the end of the period (2016) was conditioned by: a) low interest expenses; b) the gradual reduction of the expenses for provisions; c) certain decrease of the administrative expenses. The problem was that to achieve permanent increase of the financial results cannot be done only by reducing the expenses, which has its objective limitations, without the respective expansion of the income base. The above considerations explain the reasons why *the return on assets (ROA)* of the banking sector varied broadly over the last ten years in the country.

If we draw the attention to the situation in the large and in the smaller in size banks, the values of ROA will present to a great extent the complex patterns, outlined within the study of the previously mentioned financial indicators. The analysis shows that there is a certain dependency between the size of the banks and the commercial viability of their assets. The data confirm the influence of the scale effect to the benefit of the large banks from the first group. The latter ones report higher Return on Assets (ROA) in comparison with the banks of smaller size — both, in each and every of the analysed years, and as the average value for the period.

CONCLUSIONS

The exposition above allows us to do the respective inferences concerning the work hypotheses formulated at the beginning. The first hypothesis, according to which the size of the credit institutions had no significant effect on their financial results, cannot be confirmed. The results from this study proved the second hypothesis — utilizing the influence of the scale effect, the large credit institutions in the country managed to derive considerable advantages when compared to the smaller in size banks, which eventually, is reflected by their better financial results.

This finding corresponds to the need of continuation of the process of consolidation of the bank system in Bulgaria that has already started. This necessity is further intensified against the background of: a) comparatively limited economic activity in the country; b) existence of significant number of too small in size credit institutions with limited scope of activity; c) the overall increase of the regulatory requirements to the banks, in accordance with the requirements of Basel III. Proceeding from this we believe that consolidation of the banking sector is one of the routes to increase its efficiency.

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ИНФОРМАЦИЯ ОБ АВТОРЕ

Жельо Вытев Вытев — доктор экономики, доцент кафедры финансов и кредита Хозяйственной академии им. Д.А. Ценова, г. Свищов, Республика Болгария
zh.vatev@uni-svishtov.bg

ABOUT THE AUTHOR

Zhelyo Vatev Vatev — PhD in Economics, Associate Professor, Department of Finance and Credit, "D.A. Tsenov" Academy of Economics, Svishtov, Republic of Bulgaria
zh.vatev@uni-svishtov.bg