

EFFICIENCY OF THE MACEDONIAN BANKING SECTOR

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Abstract: The subject of this paper is to measure the efficiency of the Macedonian banking sector by applying two approaches: firstly, comparative analysis on the efficiency indicators of the banking sector in the Republic of Macedonia and the countries of Central and Southeastern Europe (CSEE) and secondly, Data Envelopment Analysis (DEA). The aim is to provide directions and guidelines for further strengthening of the Macedonian banking sector. According to the comparative analysis of the efficiency indicators (net interest margin and operating costs) of the Macedonian banking sector and the countries of CSEE, the countries whose banking sector shows lower operating costs are characterized with a higher level of financial deepening and greater degree of financial intermediation. The high interest margins direct towards unsuitable allocation of financial resources and insufficient competitiveness in the domestic banking sector. When applying the DEA approach, it can be stated that the group of large banks marks the highest efficiency within the Macedonian banking sector. The high concentration degree of banking activities within the group of large banks with a leading role in determining the interest rates, results in a rigid interest policy of the banks. In the direction of strengthening the efficiency of the Macedonian banking sector as a whole, the obtained results show that it is necessary for the banks to be further consolidated so as to utilize the advantages of the economies of scale, increase competitiveness, offer a diversified structure of products, invest in new contemporary software solutions that will

allow reinforcement of their employees' productivity and long-term reduction of the operating costs, as well.

Keywords: Efficiency, Banking Sector, Financial Indicators, DEA.

MSC: 90C05, 90C90.

1. INTRODUCTION

The efficiency of the banking sector in the previous decades has been strongly influenced by the high level of globalization and integration in the financial system as a whole. Furthermore, the swift development and application of IT has caused a drastic decline of the expenses for processing financial transactions. The fierce competitive battle, conditioned by the flows of deregulation, has resulted in decreasing the profit margins of the banks that seek to compensate through increasing the scale of work (i.e. economy of scale) and diversification of business activities. Strengthening the market competitiveness is followed by a highly expressed tendency of consolidating the banking institutions. Banking mergers and acquisitions have appeared as a mechanism for utilizing the economy of scale and diversification of banking activities, which leads to more efficient work and creating competitive advantage of banking institutions in an uncertain and dynamic environment.

This paper represents a measuring of the Macedonian banking sector efficiency, both from the aspect of individual banks and from the aspect of the entire banking sector.

It consists of five sections. Aside from the introduction, which is placed in the first section, the second section of the paper gives the literature review. The third section presents the research methodology, i.e. the efficiency indicators which were employed to examine the bank efficiency in 16 countries of CSEE (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, the Republic of Macedonia, Montenegro, Poland, Romania, Serbia, Slovakia and Slovenia) within the period from 2003 to 2012, and the nonparametric methodology Data Envelopment Analysis (DEA), which was used to measure the efficiency of the Macedonian banking sector within the period from 2007 to 2013. The fourth section presents the empirical results from the comparative analysis of the efficiency indicators of the banking sector in the Republic of Macedonia and the countries of CSEE, as well as the results from DEA, while the fifth section of this paper contains the conclusion.

2. LITERATURE REVIEW

To measure the performance in banking, the following approaches can be used: ratio analysis and frontier analysis [13, p. 351-352]. Frontier analysis can be parametric or non-parametric. Parametric, or econometric methods, that can be used to measure the efficiency are the following: Stochastic Frontier Approach (SFA), Distribution Free Approach (DFA), and Thick Frontier Approach (TFA).; Among the techniques that are commonly used as non-parametric, or as mathematical programming techniques, is the Data Envelopment Analysis (DEA), and the approach of Free Disposal Hull (FDH) [13, p. 352]. Besides the efficiency indicators, this paper uses the non-parametric approach DEA.

DEA allows measuring the relative efficiency of homogenous Decision Making Units (DMUs) such as banks, hospitals, schools, etc. The empirical frontier of efficiency is constructed on the basis of the empirical data for used inputs and outputs of DMUs that form the sample which is the subject of analysis. When using DEA, more inputs and outputs can be taken into consideration, a priori assumption about the functional form is not required, and the sources of inefficiency can be identified together with the level of inefficiency for each used input and output.

Based on the literature review on the application of DEA for measuring the banks' efficiency in Bosnia and Herzegovina, Bulgaria, Greece, Kosovo, Latvia, Lithuania, the Republic of Macedonia, Poland, Slovakia, Serbia, Croatia, Montenegro, and the Czech Republic, which covers 13 studies [3, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18 and 19], it has been determined that:

- the analyzed studies were published after the year 2000;
- the period of one year represents the shortest covered period, while the longest one is of twelve years;
- DEA, dynamic DEA, Window analysis, DEA and Malmquist Index, financial ratios in combination with DEA, a traditional accounting approach and DEA, DEA and I-distance are used in these studies;
- input-oriented DEA models with constant returns to scale (CRS) and variable returns to scale (VRS) assumption are used in the majority of cases;
- the most frequently used approach is the intermediation approach and the most commonly chosen inputs according to the intermediation approach are the following: deposits, employees (number of employees or employee costs) and fixed assets; the most commonly chosen outputs are: loans, investments in securities and net interest income.

Small banks are more efficient than the large banks in [9], but medium-size and small banks are identified as more efficient than large banks in [15]. Furthermore, large banks are displayed as being more efficient than small banks in [12], as well as in [17]. In the study of Toci [18], whereas the efficiency of almost every bank in Bulgaria, Croatia, Kosovo, and Montenegro is evaluated, it can be concluded that in the majority of cases, large banks are more efficient than small banks. In addition, foreign banks are more efficient than the domestic banks in [7, 12 and 18].

Nenovsky et al. [12] use two approaches: the traditional accounting approach and the DEA approach in order to estimate the efficiency of the Bulgarian banking system during the period from 1999 to 2006. The commercial Bulgarian banks are classified into groups according to bank assets (group 1, 2 and 3), and according to ownership structure (state, foreign and domestic banks). They use traditional bank efficiency indicators, or more precisely: return on assets, return on equity, operating profit, net interest income, non-interest expenditures, and exchange rate revaluations. Two DEA models being used are: the Charnes-Cooper-Rhodes (CCR) model, and the Banker-Charnes-Cooper (BCC) model. Moreover, the operating approach and the intermediation approach are applied. According to the operating approach, as the inputs are used: interest and related costs and non-interest costs, and as the outputs: interest and related revenues and non-interest revenues. According to the intermediation approach, the inputs are: fixed assets, the number of employed and deposits, and as the outputs: loans and securities. According to the obtained results, foreign-owned banks are more efficient in comparison to the

domestic-owned banks, and also large banks are more efficient in comparison to small banks.

In the Republic of Macedonia, Cvetkoska [5] applies the DEA technique Window analysis for evaluating the efficiency of the branches of Komercijalna Banka AD Skopje over a period of three years (2009-2011). In addition to this study, Micajkova & Poposka [10] estimate the efficiency of the Macedonian banking sector during the period from 2008 to 2011 by applying the DEA approach. They have measured the technical, pure technical, and scale efficiency of 15 banks in the Republic of Macedonia using two DEA models: the CCR model, and the BCC model which are input-oriented. The intermediation approach was applied and two inputs and two outputs were chosen. As the inputs, they used: total deposits received and labor costs, and as the outputs: loans to banks and customers and investments. According to the obtained results, the average efficiency of the Macedonian banking sector increased within the period from 2008 to 2010, but decreased in the last year of the observed period, i.e. in 2011. In this banking sector, the highest pure efficiency scores and the greatest scale inefficiency were noted within the group of large banks.

In the Republic of Macedonia, this is the first study that uses the ratio analysis approach and the DEA approach in order to measure the efficiency of the banks. The obtained results from the applied methodology are presented and interpreted, and we pointed out how can be improved the efficiency of relatively inefficient banks.

3. RESEARCH METHODOLOGY

3.1. Efficiency indicators of the banking sector

For measuring the banks' efficiency, the following indicators are most frequently used: **net interest margin** (the ratio between the net interest income and the average annual assets of the banks), **operating costs** (the ratio between the operating costs and the average annual assets of the banks), **cost-to-income ratio** (the ratio between the operating costs and the total income of the banks).

In order to come to a suitable interpretation of the value of these indicators, it is advisable to supplement the analysis with the indicators of profitability of the banking sector: **return on assets (ROA)** and **return on equity (ROE)**. Additionally, for a more realistic interpretation of the results of the analysis on *efficiency*, being one of the four components for the development of the banking sector, the values of the indicators of the three other components are also commonly taken into consideration: the indicator **issued loans/GDP** as a proxy for *size*, the indicator **issued loans/accepted deposits** as a proxy for *activity*, and the indicator **non-functional loans/total loans** as a proxy for *stability* of the banking sector.

This paper includes an analysis of the individual efficiency indicators within the banking sector obtained from the World Data Bank, following the example of 16 countries of CSEE, over a period of 10 years (between 2003 and 2012). Initially, we have analyzed the average value of each of the country's indicators over the period of 10 years. Afterwards, based on the average value of the indicator for all of the countries, the relative efficiency of each country is evaluated in regard with the whole analyzed sample. To notice the changes in the efficiency of the banking sector, the financial crisis in 2007 emerged as an important factor, so the comparison is made as to the average value of the

efficiency indicators of each country within the period between 2003 and 2007, specifically regarding their average value between the years of 2008 and 2012.

3.2. The BCC DEA model

The basic DEA models, most commonly used, have been the CCR model, which was introduced by Charnes et al. in [2], and the BCC model, introduced by Banker et al. in [1].

This paper employs the output-oriented BCC model, which was also used in [6, p. 79], and it "...attempts to maximize outputs without requiring more of any of the observed input values." [4, p. 41].

The envelopment form of the output-oriented Banker-Charnes-Cooper DEA model is given in (1)-(5), [4, p. 93]:

$$(BCC-O_o) \max_{\eta_B, \lambda} \eta_B \quad (1)$$

$$\text{subject to } X\lambda \leq x_o \quad (2)$$

$$\eta_B y_o - Y\lambda \leq 0 \quad (3)$$

$$e\lambda = 1 \quad (4)$$

$$\lambda \geq 0 \quad (5)$$

η_B is a scalar, $(x_{1j}, x_{2j}, \dots, x_{mj})$ are the input data for DMU_j ($j=1, \dots, n$), while the output data are $(y_{1j}, y_{2j}, \dots, x_{sj})$; the data set is given by two matrices: X is the input data matrix and Y is the output data matrix; λ is a column vector and all its elements are non-negative, e is a row vector and all its elements are equal to 1 [4, p. 22, p. 91-92]. The decision-making unit is BCC efficient if the efficiency score is 1 (100%) and if the value of all slacks is 0; more details about the BCC DEA model can be found in [4, p. 89-94].

The sample consists of 14 Macedonian banks: Alfa Banka AD Skopje, Centralna Kooperativna Banka AD Skopje, Eurostandard Banka AD Skopje, Halk Banka AD Skopje, Kapital Banka AD Skopje, Komercijalna Banka AD Skopje, NLB Tutunska Banka AD Skopje, Ohridska Banka AD Ohrid, ProKredit Banka AD Skopje, Sparkase Banka AD Skopje, Stopanska Banka AD Bitola, Stopanska Banka AD Skopje, TTK Banka AD Skopje, and Uni Banka AD Skopje. The chosen inputs are: deposits (accepted from banks and other clients) and operating costs (costs for salaries, amortization, administrative costs, and other operating costs), and the outputs: loans (issued to banks and other clients) and net interest income (the difference between the interest income and interest expenses). Regarding the chosen inputs and outputs, data were used from the revised financial reports of each bank over the period between 2007 and 2013. Appendix 1 contains descriptive statistics for the inputs and outputs.

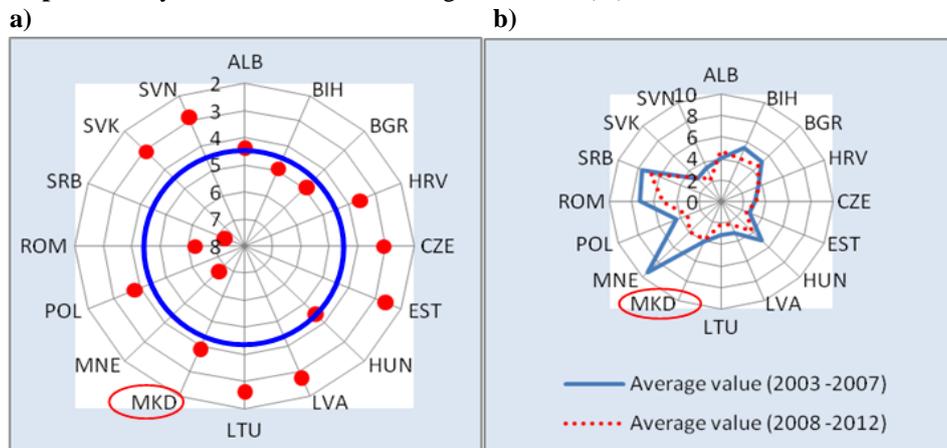
4. EMPIRICAL RESULTS

4.1. Results from the comparative analysis of the efficiency indicators of the banking sector in the Republic of Macedonia and the countries of CSEE

In Graph 1a, next to each country of the analyzed sample, the average value of the indicator *net interest margin* has been visibly marked for a period of 10 years (between 2003 and 2012). In addition, the circle represents the average value of this indicator (4.19%) for the whole analyzed sample. Moreover, for 9 countries from the sample (the Baltic countries, Croatia, Slovenia, Slovakia, the Czech Republic, Poland, and the Republic of Macedonia), the value of this indicator is below average (i.e. outside the circle).

Narrow interest margins most often occur as a reflection of the ever-growing competitiveness and efficiency. The analysis shows that lower value of this indicator is mostly found in the EU member countries which show a higher degree of convergence towards the developed countries. High interest margins demonstrate unsuitable allocation of financial resources and insufficient competitiveness in the banking sector within a country. More significant difference between active and passive interest rates can result from inadequate regulatory maintenance and a high degree of information asymmetry. Following the financial crisis (Graph 1b), all the countries from the analyzed sample (with the exception of Albania) mark a decrease in the value of the net interest margin indicator, as a result of the reduced interest income for the reduced work scope in conditions of leading an expansionary monetary policy (with lower interest rates), as well as high interest expenses for increased prices of the limited sources of financing.

Graph 1: Analysis of the net interest margin indicator (%) in the countries of CSEE

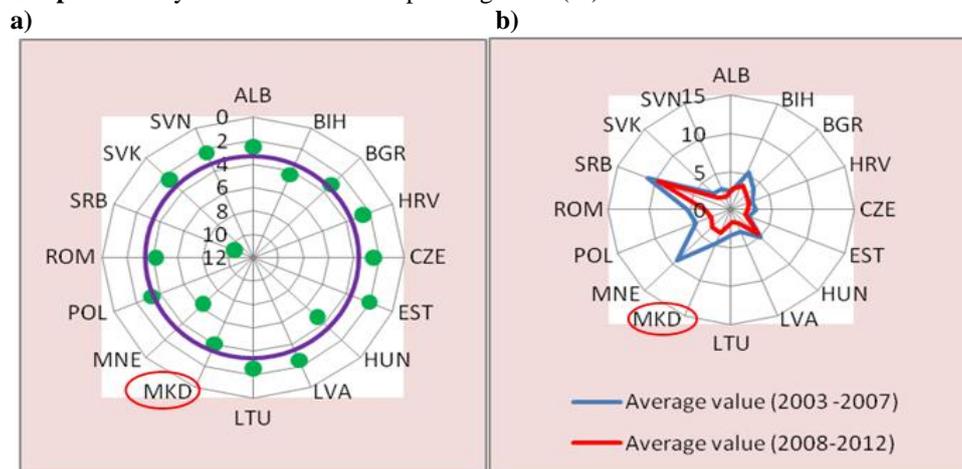


Source: Authors' own calculations, based on data from the World Data Bank, Global Financial Development

In Graph 2a, next to each country, the average value of the indicator on *operating costs* has been visibly marked within a period of 10 years. In addition, the circle represents the average value of this indicator (3.87%) for the whole analyzed sample.

Moreover, for 6 countries from the sample (the Republic of Macedonia, Serbia, Montenegro, Bosnia and Herzegovina, Romania, and Hungary), the value of this indicator is above the average value of the sample (i.e. outside the circle). The countries whose banking sector shows lower operating costs are characterized with greater correspondence between the costs for salaries and the output per employee, progress in the implementation of legal framework, and a higher level of financial deepening, which is reflected in the greater degree of financial intermediation. Following the financial crisis (Graph 2b) all the countries from the analyzed sample (with the exception of Albania) mark a decrease in the value of the indicator on operating costs, as a result of the reduced work scope, in addition to the application of better approaches and methods for controlling the non-interest expenses. Low operating costs point to higher efficiency of the banking sector only if they are followed by higher values of the indicators of profitability – ROA and ROE. Therefore, Estonia, Latvia, the Czech Republic, Poland, and Croatia are countries that have relatively efficient banking systems, resulting from the relatively lower operating costs and relatively higher profitability within the framework of the analyzed sample.

Graph 2: Analysis of the indicator operating costs (%) in the countries of CSEE



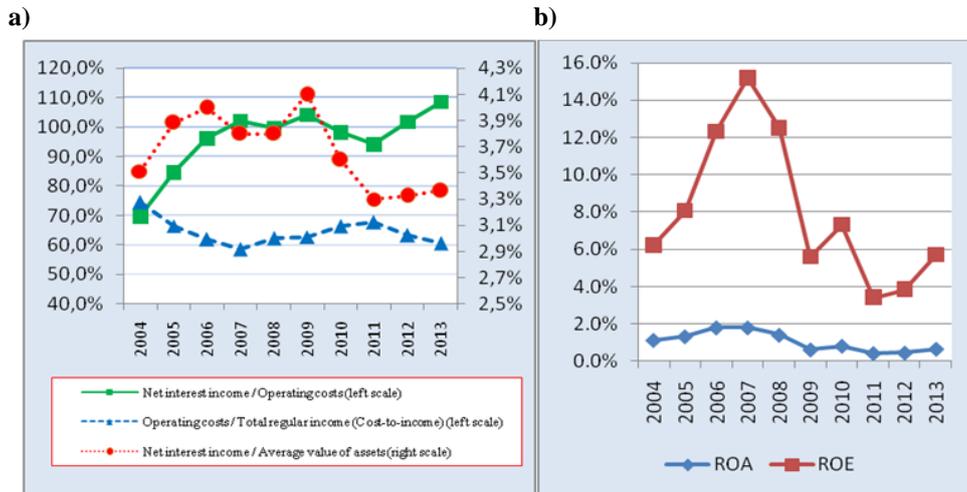
Source: Authors’ own calculations, based on data from the World Data Bank, Global Financial Development

On the basis of the above-described analyses, the conclusions made from measuring the efficiency of the banking sector in the Republic of Macedonia for the analyzed period of 10 years are: the average value of the indicator on net interest margin comes to 3.9% (insignificantly below the average value of the sample of 4.17%);, the average value of the indicator on operating costs comes to 4.02% (insignificantly above the average value of the sample of 3.87%);, the average value of the indicator on operating costs/total income (cost-to-income ratio) comes to approximately 60% and is placed in the vicinity of the average within the framework of the analyzed sample.

Graph 3 illustrates the analysis of the trends of the efficiency and profitability indicators of the Macedonian banking sector. The expressed tendency for reducing the

net interest income and increasing the operating costs in the period after the beginning of the financial crisis is followed by a fall in the indicators of profitability; thus a larger number of banks (from the group of small and medium-size banks) became characterized by loss. At the same time, slow growth of loan and deposit activity brings about an accelerated increase of non-functional loans. In conditions of slight increase of net interest income during the reduction of operating costs, the indicators of profitability have marked minor growth in the last two years.

Graph 3: Analysis of the efficiency indicator (a) and indicator of profitability (b) of the banking sector in the Republic of Macedonia



Source: Authors' own calculations, based on data from the National Bank of the Republic of Macedonia.

The Macedonian banking sector is characterized by a low degree of financial intermediation (the loan/deposit ratio comes to around 90% and is much lower than in developed countries where it can reach up to 200%), high capitalization (on 31.12.2013 the capital adequacy ratio of the banking system was double than the legal minimum, reaching 16.8%), high participation of foreign capital in property capital (on 30.09.2014 the participation of foreign capital in the total capital of the banking sector came to 74.6%), and a high degree of concentration of banking activities (60.1% of the capital, 60.5% of the assets, 68.5% of the deposits, 63.9% of the loans, and 70.1% of the total income of the banking sector is concentrated in the group of large banks). The high degree of concentration of banking activities in the group of large banks with a leading role in determining the interest rates results in a rigid interest banks' policy. The signs of improving the profitability on the level of the whole banking sector exist due to the higher net interest margins of large banks, demonstrating the inefficiency and insufficient competitiveness.

4.2. Results from the BCC DEA model

The output-oriented BCC DEA model was solved with the software DEA-Solver-LV and more information on this software can be found in [4, p. 454-476].

The average efficiency of each Macedonian bank for the duration of the observed period is presented in Table 1. From this table, it can be seen that four banks were relatively efficient within the period from 2007 to 2013, and they are: Kapital Banka AD Skopje, Komercijalna Banka AD Skopje, ProKredit Banka AD Skopje, and Stopanska Banka AD Skopje., The least efficient bank during the observed period was Centralna Kooperativna Banka AD Skopje.

Table 1: Average efficiency of Macedonian banks

Bank	Average efficiency
Alfa Banka AD Skopje	0.7765
Eurostandard Banka AD Skopje	0.9273
Halk Banka AD Skopje	0.9354
Kapital Banka AD Skopje	1
Komercijalna Banka AD Skopje	1
NLB Tutunska Banka AD Skopje	0.9711
Ohridska Banka AD Ohrid	0.8801
ProKredit Banka AD Skopje	1
Stopanska Banka AD Bitola	0.9429
Stopanska Banka AD Skopje	1
Sparkase Banka AD Skopje	0.9624
TTK Banka AD Skopje	0.8255
Centralna Kooperativna Banka AD Skopje	0.5781
Uni Banka AD Skopje	0.7972

Source: Authors' own calculations

In the last year of the observed period, the average efficiency of the group of small banks (Alfa Banka AD Skopje, Eurostandard Banka AD Skopje, Kapital Banka AD Skopje, and TTK Banka AD Skopje) is 0.9074; the average efficiency of the group of medium-size banks (Centralna Kooperativna Banka AD Skopje, Halk Banka AD Skopje, Ohridska Banka AD Ohrid, ProKredit Banka AD Skopje, Sparkase Banka AD Skopje, Stopanska Banka AD Bitola, and Uni Banka AD Skopje) is 0.8418, and for the group of large banks (Komercijalna Banka AD Skopje, NLB Tutunska Banka AD Skopje, and Stopanska Banka AD Skopje) is 1. The group of large banks marks the highest efficiency within the framework of the Macedonian banking sector for the analyzed year; thus the three large banks mark the highest degree of utilization of the deposit base and greater ratio between the net interest income and the operating costs. In the direction of strengthening the efficiency of the Macedonian banking sector as a whole, it is necessary to further consolidate the banks so to use the advantages of the economies of scale, increasing competitiveness, offering a diversified structure of products, investing in new and contemporary software solutions, which will reinforce the productivity per employee and reduce the operating costs.

From Table 2, it can be seen that the average efficiency of the banking sector in the Republic of Macedonia reached its peak in 2008 (0.9366), while in 2009 it was grounded (0.8696).

Based on the data from the last year of the observed period and the results obtained with the BCC model, five banks included in the analysis have been relatively inefficient (Alfa Banka AD Skopje, Stopanska Banka AD Bitola, TTK Banka AD Skopje, Centralna Kooperativna Banka AD Skopje, and Uni Banka AD Skopje). Each of the relatively inefficient banks can improve their efficiency if they make appropriate changes in their inputs, i.e. outputs (Table 3). For example, Alfa Banka AD Skopje should reduce the input operating costs for 20.58%, to increase the output loans for 71.43% and to increase the output net interest income for 49.63%, while TTK Banka AD Skopje should increase the output loans for 18.25% and the output net interest income for 4.02%, etc.

Table 2: Summary results

	2007	2008	2009	2010	2011	2012	2013
No. of banks	14	14	14	14	14	14	14
No. of efficient banks	8	8	6	7	8	6	9
Average efficiency	0.9169	0.9366	0.8696	0.9083	0.8954	0.8770	0.8945
Standard deviation	0.1078	0.1022	0.1420	0.1291	0.2012	0.1925	0.1714
Maximum	1	1	1	1	1	1	1
Minimum	0.6486	0.6467	0.5774	0.5358	0.2682	0.3440	0.4540

Source: Authors' own calculations

Table 3: Projection (Banker-Charnes-Cooper model)

	Deposits	Operating costs	Loans	Net Interest Income
Alfa Banka AD Skopje	0.00%	-20.58%	71.43%	49.63%
Stopanska Banka AD Bitola	0.00%	0.00%	41.25%	57.56%
TTK Banka AD Skopje	0.00%	0.00%	18.25%	4.02%
Centralna Kooperativna Banka AD Skopje	0.00%	0.00%	157.43%	120.25%
Uni Banka AD Skopje	0.00%	0.00%	36.86%	36.86%

5. CONCLUSION

Based on the comparative analysis of the efficiency indicators of the Macedonian banking sector (net interest margin and operating costs) and the countries of CSEE, it can be stated that their value shifts around the average value of these indicators for the whole analyzed sample. The high interest margins point towards unsuitable allocation of financial resources and insufficient competitiveness in the domestic banking sector. It is obvious from the analysis that, specifically, the lower value of this indicator has been found in the EU member countries which show a higher degree of convergence towards developed countries. The countries whose banking sector shows lower operating costs are

characterized with greater correspondence between the costs for salaries and the output per employee, progress in the implementation of legal framework, and higher level of financial deepening, which is reflected in the greater degree of financial intermediation.

When the DEA approach is used, it can be stated that the group of large banks marks the highest efficiency in the Macedonian banking sector. Thus, the three large banks mark the highest degree of usage of deposit base and greater ratio between the net interest income and the operating costs. They also show greater independence from additional revenues based on fees and charges.

Taking into consideration that low interest rates on deposits discourage savings, while high interest rates on loans discourage investments, running a balanced policy on the interest margin is quite important for the stability of the banking system. High degree of concentration of banking activities in the group of large banks, with a leading role in determining the interest rates, results in a rigid interest bank policy. The signs of improving the profitability on the level of the whole banking sector exist due to the higher net interest margins of large banks, which demonstrate the inefficiency and insufficient competitiveness.

Increased competition in the financial services may result in improved operational efficiency, more appropriate cost control and greater profitability in the banking sector. In the direction of strengthening the efficiency of the banking sector as a whole, it is necessary for the banks to be further consolidated so as to utilize the advantages of the economies of scale, increase competitiveness, offer a diversified structure of products and invest in new contemporary software solutions that will allow reinforcement of their employees' productivity and long-term reduction of the operating costs.

Following modern trends of internationalization, applying new banking technologies, consolidating banks, as well as strengthening and enhancing financial intermediation, Macedonian banks may become more efficient by offering more quality financial products and services. Elimination of inefficiencies and cost reduction remain to be a long term challenge for the survival of banks in the turbulent market environment of the banking system of the Republic of Macedonia.

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APPENDIX 1

Descriptive statistics for inputs and outputs

2007

	Deposits	Operating costs	Loans	Net interest income
Max	47.031.140,00	1.667.381,00	38.501.874,00	2.156.341,00
Min	22.870,00	74.333,00	91.631,00	41.906,00
Average	12.107.506,43	512.324,21	10.016.357,07	617.307,07
SD	15.651.700,64	510.355,05	13.195.549,48	713.775,45

2008

	Deposits	Operating costs	Loans	Net interest income
Max	48.793.111,00	1.785.699,00	43.551.164,00	2.577.453,00
Min	76.742,00	84.556,00	115.074,00	30.203,00
Average	13.629.182,50	616.453,14	12.235.302,43	740.769,64
SD	16.816.994,01	551.997,21	14.791.426,81	863.152,57

2009

	Deposits	Operating costs	Loans	Net interest income
Max	54.493.629,00	1.990.157,00	41.883.620,00	2.623.348,00
Min	107.479,00	89.229,00	107.789,00	34.161,00
Average	14.573.409,64	680.933,07	11.610.427,57	740.239,93
SD	18.768.773,46	640.040,40	14.217.984,43	816.858,64

2010

	Deposits	Operating costs	Loans	Net interest income
Max	59.635.019,00	2.002.242,00	42.566.422,00	2.455.850,00
Min	392.397,00	105.412,00	229.271,00	41.068,00
Average	16.387.893,50	704.027,64	12.287.548,36	721.407,00
SD	20.525.589,28	639.375,35	14.653.957,44	813.975,42

2011

	Deposits	Operating costs	Loans	Net interest income
Max	66.932.574,00	2.027.274,00	44.348.950,00	2.634.937,00
Min	562.501,00	107.719,00	374.247,00	18.763,00
Average	17.681.692,43	740.596,64	13.173.786,14	728.680,07
SD	21.296.354,65	638.242,19	15.371.151,57	814.272,91

2012

	Deposits	Operating costs	Loans	Net interest income
Max	69.237.996,00	1.975.803,00	46.654.961,00	2.829.672,00
Min	1.073.344,00	113.578,00	837.654,00	33.739,00
Average	18.839.401,57	766.180,50	13.876.902,36	806.694,21
SD	21.534.568,79	637.502,02	15.589.649,53	907.137,71

2013

	Deposits	Operating costs	Loans	Net interest income
Max	73.441.443,00	2.290.111,00	49.118.907,00	2.966.034,00
Min	1.472.038,00	110.951,00	1.143.740,00	66.469,00
Average	19.700.483,64	789.280,00	14.915.311,29	846.030,86
SD	22.742.153,01	680.565,68	16.231.493,69	913.259,06

Source: Authors' own calculations