EFFICIENCY ANALYSIS OF BANKING SYSTEM OF THE REPUBLIC OF MOLDOVA BASED ON GENERAL INDICATORS

ANALIZA EFICIENȚEI SISTEMULUI BANCAR AL REPUBLICII MOLDOVA PE BAZA INDICATORILOR GENERALI

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Annotation: Information about banking efficiency and its determinants may have important implications for regulators and banking supervisors in reforming and adjusting the legislative framework to internațional standards and practices, but also in the diagnosis of system problems. In this study the authors have reflected negative and positive aspects of the Moldavian banking sector in terms of its efficiency.

Adnotare: Informațiile despre eficiența bancară și factorii determinanți ai acesteia pot avea implicații importante pentru autoritățile de reglementare și supraveghetorii bancari în reformarea și adaptarea cadrului legislativ la standardele și practicile internaționale, dar și în diagnosticarea problemelor sistemului. În acest studiu autorii au reflectat aspectele negative și pozitive ale sectorului bancar moldovenesc în termeni de eficiență.

Keywords: bank, banking system, banking efficiency, efficiency index, rating.
Cuvinte-cheie: bancă, sistem bancar, eficiență bancară, indice de eficiență, rating.

Introduction

Given the fact that the banking system is an important linking element in the structure of Moldova's economy, the appreciation of its effectiveness is very important for the estimation of economic development of the country and its viability. The analysis of the efficiency of the banking system has an essential role in the analysis of financial indicators of banking system, the primary task being to find ways of further development of the bank that will help to maximize bank's profits, or at least will help to avoid unnecessary losses. The problem of assessing bank efficiency has been addressed in several papers, from the perspective of theoretical and practical nature. Despite the numerous works the approaches on the concept of efficiency in the banking system are still unclear as well as the choice of evaluation tools. Information on banking efficiency and its determinants may have important implications for regulators and banking supervisors, for reforming and adjusting the legal framework to internațional standards and practices, but also for the diagnosis of problems within the financial system.

At the same time banking efficiency is an indicator that reflects, on the one hand, the managerial abilities of teams that are leading commercial banks, as well as the general level of maturity of economy. The study on bank efficiency will allow the benchmarking of national banking system to that of other countries in the region. In this study, the authors emphasized the

indicators used to quantify the bank efficiency and have recorded tangible successes related to this chapter.

Efficiency is a category sensitive to many variables, and ultimately its size depends on a variety of different factors. Therefore, to succeed analysis and an objective assessment of efficiency in the banking system is appropriate the presentation of those indicators that influence the size and dynamics of efficiency.

Materials and methods of research

Financial indicators established by the National Bank of Moldova for determining financial performance and efficiency of the banking system are classified into 4 groups, listed below:

1. Capital, which involves assessing the following indicators:

◗ Tier I capital - which includes the total amount of ordinary shares; preferential shares with unfixed dividends and preferential shares with non-cumulative fixed dividends issued for unlimited period; capital surplus (money obtained from the sale of shares above over the nominal value (fixed) retained earnings and reserves obtained or increased as a result of profit distribution, minus the total amount of: size of discounts for losses on loans and financial leasing (risk fund) net intangible assets;

◗ Calculated but unreserved amount of discounts for losses on assets and conditional commitments - representing the difference between the calculated reductions for assets and conditional commitments and subtractions from depreciations losses made on assets and conditional commitments (according to IFRS) and influences the value of Tier I capital;

◗ Total regulatory capital - includes the total amount of: Tier I capital and Tire II capital, minus: equity share in the capital of other banks that hold the license of the National Bank of Moldova,

◗ Risk weighted assets - the bank's assets and some conditional accounts (representing a risk for the bank) that classified in categories with specific risk weights. The risk weight assigned to a particular asset or a conditional account determines the percentage of asset, which are cumulated with all other risk-weighted assets to determine the total amount of the bank's risk weighted assets. Before applying the risk-weighting on extra-balance sheet accounts (which represents a risk for the bank) is applied the factor of credit transforming and then to each transformed category is assigned a category of risk weighting according to asset type or partner type with which the transaction is performed [4];

◗ Risk Weighted Capital Adequacy is used for assessing risk weighted capital adequacy, where total regulatory capital is divided by risk-weighted assets:

$$C_A = \frac{RC}{TA_{RW}} \bullet 100 \quad (1)$$

where:

C_A – Capital Adequacy;

RC - regulatory capital;

TA_{RW} - total risk weighted assets.

◗ The share of foreign investments in the social capital of banks- reflects the share in percent of foreign sources within the commercial bank capital;

◗ The share of total regulatory capital of 5 banks (with the highest capital) in the total weighted capital, calculated according to the following formula:

$$\frac{\sum_{i=1}^{5} TRCi}{T_{TRC}} \bullet 100 \ (2)$$

where:

$\sum_{i=1}^{5} TRCi$ - Total regulatory capital of 5 banks;

T_{TRC} - Total regulatory capital.

Assets, that imply the appreciation of the following indicators care:

◗ The share of 5 banks with the highest amount of assents in the total amount of assets calculated according to the formula:

$$\frac{\sum_{i=1}^{5} Ai}{TA} \bullet \mathbf{100} \ (3)$$

where:

$\sum_{i=1}^{5} Ai$ - Assets value of given 5 banks;

TA - total assets.

◗ Loans debts balance – the value of credits and interest rates unpaid yet by debtors;

◗ The ratio of bad loan debt balance in the total loan debts balance, that is calculated according to the formula:

$$R_{DCN} = \frac{S_{DCN}}{S_{DC}} \bullet \mathbf{100} \ (4)$$

where:

R_{DCN} - The ratio of nonperforming loans debts balance;

S_{DCN} - the balance of debts on nonperforming loans;

S_{DC} - the total balance on loan debts.

◗ The ratio of debts on net nonperforming loans in the total amount of regulatory capital which is calculated according to the formula:

$$R_{DCNN} = \frac{S_{DCNN}}{TRC} \bullet 100 \ (5)$$

where:

R_{DCNN} - ratio of debts on net nonperforming loans;

S_{DCNN} - balance of debts on net nonperforming loans (the difference between the debt balance and the amount of nonperforming loans subject to classification and the sum of reductions calculated for losses on nonperforming loans);

TRC - total regulatory capital.

◗ The rate of nonperforming assets net balance in the total regulatory capital, calculated by the formula:

$$R_{NA} = \frac{S_{NA}}{TRC} \bullet 100 \ (6)$$

where:

R_{NA} - the ratio of nonperforming assets;

S_{NA} - the balance of nonperforming assets;

TRC - Total regulatory capital.

▶ The sum of subtractions calculated for losses on assets and conditional commitments according to IFRS;

▶ The rate of subtractions calculated for the balance of debts on loans calculated according to the formula:

$$R_{RDC} = \frac{RDC}{S_{DC}} \cdot \boldsymbol{100} \quad (7)$$

where:

R_{RDC} -the ratio of subtractions calculated for the balance of debts on loans;

RDC - subtractions calculated for the balance of debts on loans;

S_{DC} - balance of debts on loans.

▶ The Average interest-bearing assets to total average assets, calculated according to the formula:

$$R_{\overline{IA}} = \frac{\overline{ID}}{\overline{A}} \cdot 100 \quad (8)$$

where:

$R_{\overline{IA}}$ - the average ratio of interest bearing assets;

$\overline{ID}$ - the average of interest bearing assets;

$\overline{A}$ - average of assets.

▶ The ratio of debt on foreign currency loans in the total debt balance on loans, calculated according to the formula:

$$R_{DCV} = \frac{S_{DCV}}{S_{DC}} \cdot \boldsymbol{100} \quad (9)$$

where:

R_{DCV} - the ratio of debts on foreign currency loans;

S_{DCV} - the balance of debts on foreign currency loans;

S_{DC} - the balance of debts on loans.

2. **Revenue and profitability,** involving calculation and assessment of the following indicators

▶ The return on assets is calculated according to the formula:

$$ROA = \frac{P_A}{\overline{A}} \cdot 100 \quad (10)$$

where:

ROA - return on assets;

P_A - profit on annual base;

$\overline{A}$ - the average value of assets.

▶ The return on capital is calculated according to the formula:

$$ROE = \frac{P_A}{\overline{C}} \cdot 100 \quad (11)$$

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where:

ROE - return on capital;

P_A - annual profit ;

$\overline{C}$ - the average value of capital.

 ◗   Return on interest bearing assets is calculated according to the formula:

$$R_{IA} = \frac{V_I}{\overline{A_I}} \cdot 100 \ (12)$$

where:

R_{IA} - return on interest bearing assets;

V_I - annual revenue from interest;

$\overline{A_I}$ - average value of interest bearing assets.

 ◗   Net interest margin calculated according to the formula:

$$MN_I = \frac{VN_I}{\overline{A_I}} \cdot 100 \ (13)$$

where:

MN_I - net interest margin;

VN_I - annual Net revenue from interest;

$\overline{A_I}$ - average value of interest bearing assets.

 ◗   Efficiency Index, calculated by the formula:

$$I_E = \frac{VN_I + V_{otherthaninterest}}{C_{otherthaninterst}} \cdot 100 \ (14)$$

where:

I_E - efficiency index;

VN_I - annual net revenue from interest;

$V_{otherthaninterest}$ - revenue other than from interest;

$C_{otherthaninterst}$ - expenses other than interests.

3. Liquidity, that implies the calculation and estimation of the following indicators:

 ◗   Long-term liquidity that is considered to be positive when it is lower than 1 and is calculated according to the formula [1]:

$$L_L = \frac{A_{t \succ 2\,years}}{RF_{t \succ 2\,years}} \ (15)$$

where:

L_L - Long-term liquidity;

$A_{t \succ 2\,years}$ - assets with term more than 2 years;

$RF_{t \succ 2\,years}$ - financial resources with term higher than 2 years.

 ◗   The current liquidity that is calculating according to the formula [1]:

$$L_C = \frac{A_L}{TA} \ (16)$$

where:

L_C - current liquidity;

A_L - liquid assets;

TA - total assets.

All these indicators are presented through tables or graphs additionally is presented the appreciation of their size and dynamics for the banking sector of the Republic of Moldova. The assessment of capital related indicators appreciation is performed by drawing the following table:

Table 1. The estimation of capital related indicators of commercial banks from the Republic of Moldova [elaborated by the author based on 5]

Nr.	Indicators	Measure unit	Year 2012	Year 2013	Year 2014	Year 2015
1.	Tier I capital	mln. MDL	6911,4	7926,3	8686,2	8995,70
2.	Calculated but unreserved value of subtractions from losses on assets and conditional commitments	mln. MDL	2439,2	2821,03	2960,86	2079,42
3.	Risk weighted assets	mln. MDL	28842,6	35484,87	64764,02	35470,14
3.	Adequacy of risk weighted capital	%	24,3	23,02	13,92	26,16
4.	The share of foreign investments in social capital of bancs	%	71,7	72,24	77,56	82,92
5.	The weight of TRC of 5 banks (with the highest capital) in the total TRC	%	66,6	64,15	67,48	78,74

As a result of information provided above, could be stated, that Tier I capital registered an increase of 14.6% reaching 7.9 billion MDL at the end of 2013 comparing to 2012 and an increase of up to 25.68% in 2014 compared to 2012. These results are due to the profits obtained in this sector and the issuing of shares in four banks; from the other hand an increase of only 3.56% was registered in 2015 compared to 2014. According to the National Bank, Tier I capital reflects the consolidation of licensed banks that offers the possibility to cover potential losses without influencing or harming the financial security. However, the size of Tier I capital reveals the resilience of the banking system to possible financial obstacles both from internal and external environment.

The share of foreign investments in capital of licensed banks reached 72.24% at the end of 2013, 77.56% at the end of 2014 and 82.92% in 2015, registering an increase of 5.86% in 2014 compared to 2012 followed by an increase of 5.36% in 2015 compared to 2014. The increasing trend was driven by the increase of investment value from non-resident shareholders in social capital and in domestic shareholders' investment.

Average risk-weighted capital adequacy in the banking sector of the Republic of Moldova, although was falling by 0.9% in 2013 compared to 2012, still remained quite high during the years 2012 and 2013: 23.02% in 2013 and 24.3% in 2012 compared to the norm of 16%. The high level of this indicator denotes the existence of lending potential in banks. While in 2014 this indicator has decreased sharply, registering 13.92%, it was aimed to increase almost by 2 times by the end of 2015, which was assessed positively.

The share of TRC of 5 banks (with the largest capital) in total TRC of banks in the sector, although it is characterized by a slope decreasing in 2013 compared to 2012, however, the author considers that the overall level of commercial banks , the capital value of only 5 banks in total regulatory capital remains quite high.

For a better analysis of the assets of banks in the banking system of the Republic of Moldova is presented the Figura 1 below which summarizes information on the total amount of assets available in 11 commercial banks at the end of 2015.

Thus, on 01.01.2016 the assets of commercial banks recorded cumulative amount worth 69,095,552,149 MDL. A significant impact on assets' increase within commercial banks had the positive dynamics of Articles "cash and cash equivalents" and "loans and receivables". It was registered the tendency of the top 5 banks in maintaining a high share in total banking sector assets. Thus, as of 01.01.2016 five largest banks held the cumulative value of assets representing 58,012,832,421 MDL, their share in total assets reaching 83.96 % in the total value of assets in the Moldovan banking system.
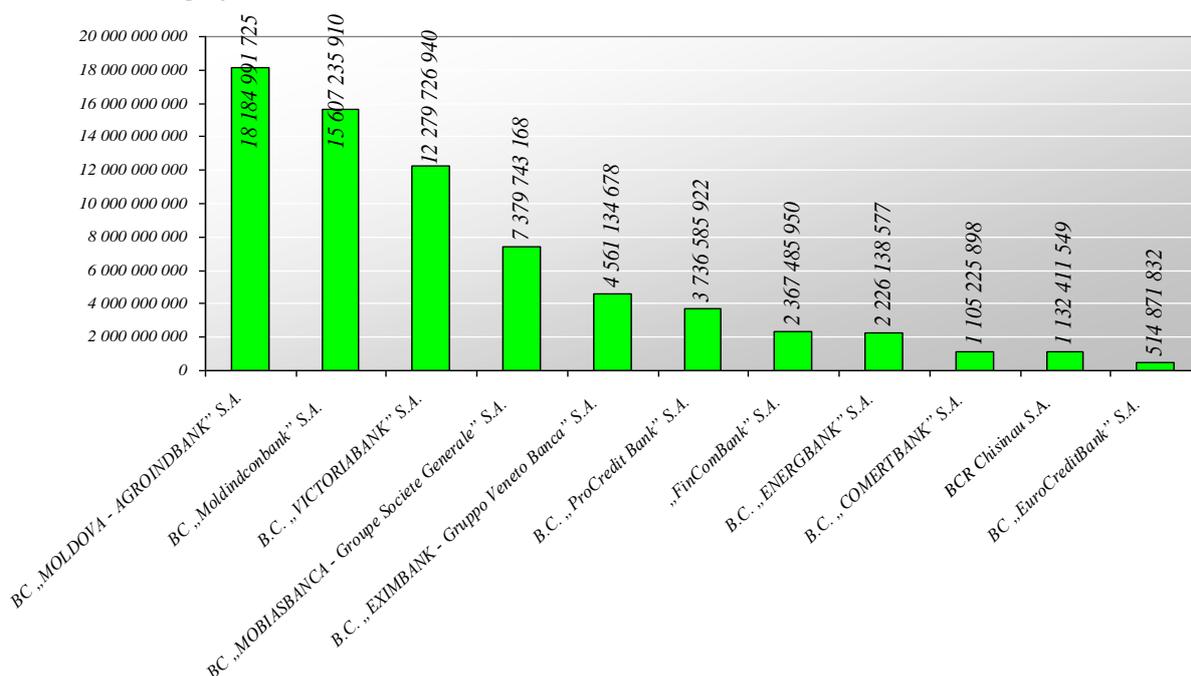

Figura 1. The value of commercial banks' assets at 21.12.2015
[elaborated by the authors based on 4]

As considering the structure of assets, the main role in their formation have the loans granted to various categories of customers. In this regard, in the top commercial banks with most loans are listed:

- CB „Moldova - Agroindbank" JSC.
- CB „Moldindconbank" JSC.
- CB „Victoriabank" JSC.
- CB „MobiasBanca" Groupe Societe Generale JSC
- CB „ProCreditBank" JSC

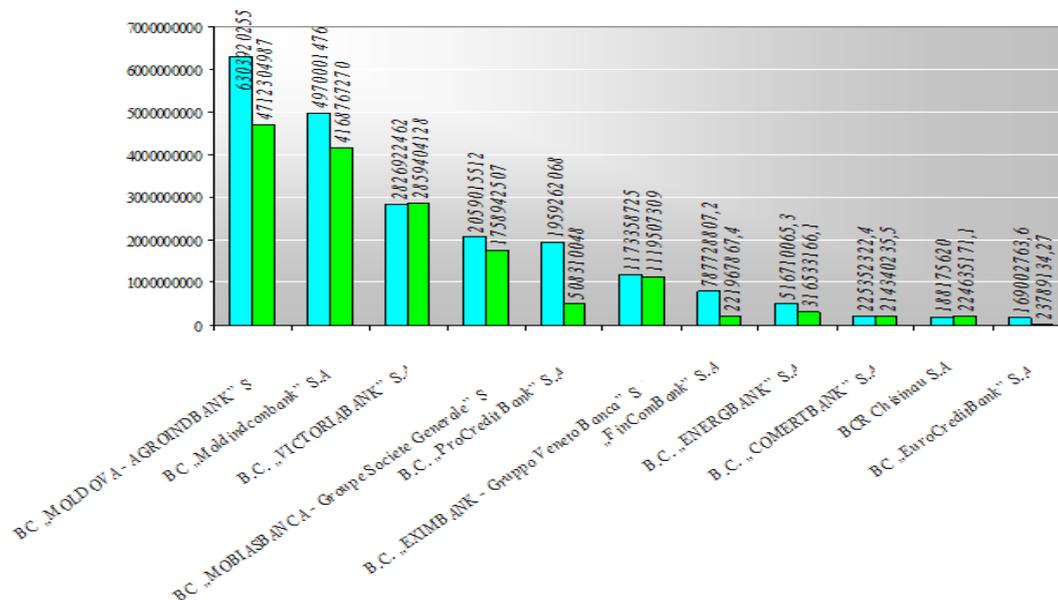The overall situation is presented in the Figura 2 below:

Figura 2. The structure of credits in the banking sector of the Republic of Moldova (february, 2016) (MDL) [elaborated by the author based on 5]

Another series of indicators related to commercial banks' assets is presented in the Table 2.

Table 2. The calculation of indicators related to banking sector of the Republic of Moldova [elaborated by the author based on 3]

Nr	Indicators	Measure unit	Year 2012	Year 2013	Year 2014	Year 2015
1.	The debt ratio of balance from nonperforming loans in the total debt balance on loans	%	14,5	11,6	11,73	11,56
2.	The debt ratio of net nonperforming loans to total regulatory capital	%	25,9	16,6	14,26	15,05
3.	The ratio of net nonperforming assets balance of total regulatory capital	%	39,3	24,55	19,13	18,56

The share of nonperforming loans in the banking system of the Republic, at the end of 2013 was 11.6%, registering a decrease of 2.9% from the previous year and a slight increase towards the end of 2014, reaching 11.73 % followed by a decline in 2015 reaching the levels of 2013.

According to the National Bank data, the net balance of debt from nonperforming loans in cumulative regulatory capital at the end of 2013 was 16.6%, decreasing with 9.3 p.p. comparing to the previous year; and 14.26% in 2014, which means a decrease of 11.64 p.p. compared to 2012, followed by an increase in 2015, reaching 15.05%.

The net balance of nonperforming assets in cumulative regulatory capital at the end of 2013 was 24.55%, registering a new decrease by 14.7% against the same period of 2012 and a decrease of 20.17% in 2014 compared to 2012. This decreasing trend continues and by the end of 2015, the rate of net nonperforming assets in the total balance of regulatory capital reached 18.56%.

The decrease in dynamics of all these indicators show an improvement in banks 'activity in terms of more objective evaluation of the possibility of granting loans and therefore by decreasing the volume of nonperforming credits in total assets of commercial banks.

The table below presents the indicators related to the return on assets and capital in the banking sector of the Republic of Moldova.

Table 3. The calculation of indicators related to the return on assets and capital in the banking sector of the Republic of Moldova [elaborated by the author based on 3]

Nr	Indicators	Measure unit	Year 2012	Year 2013	Year 2014	Year 2015
1	Return on assets	%	0,8	1,6	0,85	2,10
2	Return on equity	%	4,3	9,4	5,86	12,78

Return on assets and return on equity was at the end of 2015 was representing 2.10%, at end 2014 reached 0.85%, by the end 2013 it has slightly increased 1.6% from 0.8% from the end of 2012; at the same time the return on equity has recorded the share of 12.78% at the end of 2015, 5.86% at the end of 2014, 9.4% at the end of 2013, comparing to 4.3% at the end of 2012. The situation shows practically a doubling of indicators profitability in 2013 compared to 2012 and a recovery to the level of 2012 in 2014. A sharp recovering could be seen by the end of 2015, both indicators showing an increase, return on assets - 1.31 times and 1, 36 times for return on equity.

The evolution of profitability of these indicators was driven largely by the recorded profit in this sector during 2013 and the issuance of shares in four commercial banks; and the evolution from 2014 was due to the falling profits in some banks.

The table below presents the indicators of the liquidity in the banking sector of the Republic of Moldova.

Table 4. The calculation of liquidity related indicators in the banking sector of the Republic Moldova [elaborated by the author based on 3]

Nr	Indicators	Measure unit	Year 2012	Year 2013	Year 2014	Year 2015
1	Long Term liquidity	coefficient	0,7	0,7	1,54	0,70
2	Current liquidity	%	32,9	33,8	22,48	41,55

The table above reveals that liquidity indicators for 2012, 2013 are relatively stable – their sizes are practically unchanged (long-term liquidity is constant); while 2014 these indicators recorded major changes: long-term liquidity has increased from 0.7 in 2013 to 1.54 at the end of 2014; while the current liquidity oppositely, has decreases from 33.8% in 2013 to 22.48% in 2014. As for 2015, the situation is changing: long-term liquidity diminishes reaching the level of 2013, while current liquidity doubles reaching the size of 41.55%.

According to representatives of NBM the values of liquidity indicators reveal the presence of adequate supporting of payments of bonds and determine the soundness of banks to possible external shocks.

Results and discussion

And finally, is presented below the corresponding indicator of efficiency in the banking sector of the Republic of Moldova, the size of which depends directly on the overall activity of the commercial bank, because as variables to determine it are the income and expenses recorded by the bank.

Table 5. The calculation of efficiency index in the banking sector of the Republic of Moldova
[Elaborated by the author based on 5]

Nr	Indicators	Measure unit	Year 2011	Year 2012	Year 2013	Year 2014	Year 2015
1	Efficiency index	%	178,9	117,2	135,3	117,46	134,81

The dynamics of this index at the banking system level is presented in the following Figura :
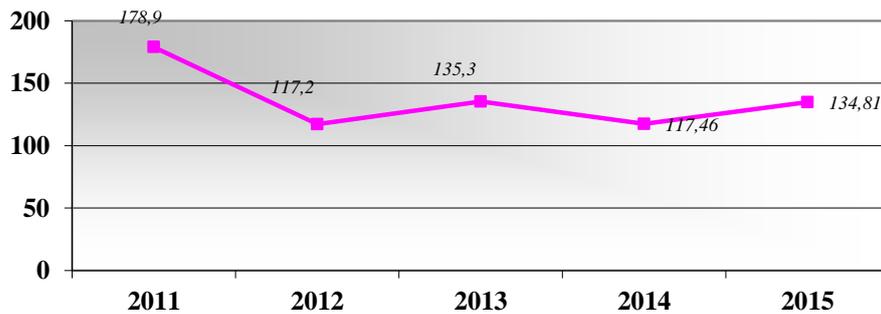

Figura 3. The dynamics of efficiency index of banking system of the republic of Moldova (%)
[elaborated by the author based on 3]

As could be noticed the efficiency index in banking system has recorded a considerable decrease in 2012 compared to 2011, from 178.9% to 117.2%, the fact that is assessed negatively. Its depreciation has a symptomatic character. On the one hand, it suggests its inseparable connection with the real economy, and on the other hand, the lack of the clear and tangible government actions for its growth, and this fact has a boomerang effect on the entire financial sector of the Republic of Moldova that has to support all the consequences. However, the situation is slightly recovering by 2015.

The size of efficiency index for commercial banks from the Republic of Moldova for 2015 is shown in the following Figura 3.
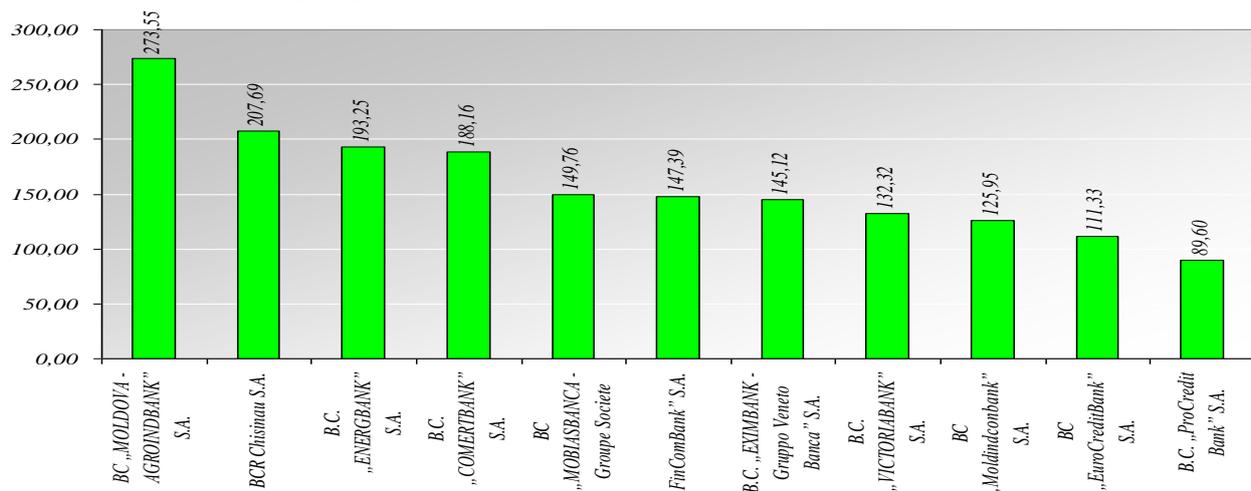

Figura 4. The size of efficiency index for commercial banks from the Republic of Moldova for January 2016 (%) [elaborated by the author based on 3]

Conclusions

According to the authors for determining the banking efficiency based on the proposed by NBM indicators comes down to the fact that this indicator does not characterize the overall activity of commercial banks, thus the authors did not agree make a rating of commercial banks based on efficiency indicator developed and proposed by NBM because always the high incomes and minimal expenses are not identical with efficiency. The efficiency is rational characterized by the relationship between effect and effort. Yes, revenues and expenses are effects are efforts, however, a commercial bank do not just get as effects the income and moreover its efforts are not summarized only to expenditures that they incur. As the effort may be considered also the assets of the bank and its capital.

Therefore, the authors consider it necessary to assess the level of efficiency through another methodology that would allow the cumulating of several indicators of return, profitability that could ultimately determine a more complex indicator that would allow assessing the effectiveness of commercial banks and their classification.

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