The instruments of the ratio analysis in the assessment of economic and financial situation of the bank

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Abstract

The activity of every bank is regularly submitted control and assessment. One of the method’s serving the measurement of financial condition and the effectiveness of the activity of the bank is the ratio analysis. It is the calculation of the rates on the basis of the data included in the financial reports and their comparative assessment in time. The rates are constructed on the basis of mathematical rule of comparison of the two quantities which is the designating of their ratio.

In the article there were characterized the six groups of the rates. There are the following ones:

I. the rate of capital adequacy;
II. the measures characterising the accounting liquidity;
III. the values of the assets and liabilities;
IV. the rates of profitability;
V. the rate of the effectiveness of the usage of the resources (the productivity index);
VI. the rates of stock market.

Ratio analysis is the commonly used financial instrument for the assessment of economic and financial condition of the bank. The method requires the appropriate selection of the taxonomic tools. They must meet the needs and simultaneously give the complex picture of the situation. While making the interpretation of the obtained results, it is essential to make the analysis of their reason to show the changes and to make the assessment of the results of them. The designated values of the rates and their assessment are the subject of interest especially of the owners of the bank and the people who manage, these are: the banking supervision, investors, clients and the individuals and legal persons cooperating with the bank.

Keywords: banking financial analysis, financial rates.

Introduction

Bank is the financial institution which, on the basis of the appropriate permissions conducts economic activity. The results of this activity are submitted the regular control and assessment. The financial analysis is made. The basis to its carrying out is the set of the rates with the usage of which, it is possible to assess the current financial condition of the bank and the perspectives of its development. The source of data to make the computing, is the financial reports of the bank (balance sheet, the profit and loss account and the report of the cash flow). The rates examining the financial condition of the bank can be divided into 6 groups (Kopiński, 2008, Świderski 1999). They will be presented in the article.

Material and methods

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I. THE RATE OF CAPITAL ADEQUACY

Capital adequacy is the synthetic rate of the assessment of the financial situation of the bank and its solvency.

\[
\text{solventy ratio} = \frac{\text{Tier I capital + Tier II capital}}{\text{risk - weighted assets}}
\]

1) Tier I capital—the basic capital (it involves equity capital and the retained profits).

Tier II capital—the reserve capital (it involves the undisclosed reserves, the reserves from the revaluation, the hybrid financial instrument and the subordinated debt).

The assets expressed at risk— they involve credit, market and operational risks. The higher the risk is, the bigger its weight is.

II. THE MEASURES CHARACTERISING THE ACCOUNTING LIQUIDITY

The accounting liquidity is its ability to make the payment of obligations timely. Its financial liquidity is maintained when in individual dates the assets can be covered by the liabilities.

1) the measure of share of liquid assets = \frac{\text{liquid assets}}{\text{assets in general}}

The liquid assets are of the following:
- a vista stake (first group) in the central bank also the funds accumulated at the bank cashiers and their substitutes,
- the receivables from the financial, nonfinancial and budget sector which are the stakes on the current account and also the stakes till three months,
- the debt securities and stocks.

2) the measure of liquidity = \frac{\text{the surplus/ the deficit}}{\text{the assets in general}}

The surplus/deficit is the assets in general.

3) the measure of the financial liquidity = \frac{\text{maturing assets}}{\text{required liabilities}}

Contract periods according to which the financial liquidity of the group of assets, liabilities and off-balance sheet item are counted in the time interval are:
- I group—a vista,
- II group—below one month,
- III group—1-3 months,
- IV group—3-6 months,
- V group—6-12 months,
- VI group—1-2 years,
- VII group—2-5 years,
- VIII group—above 5 years,
- IX group—different.

4) the measure of fast liquidity = \frac{\text{liquid assets (fast)}}{\text{current liabilities}}

5) the value of the current liquidity according to MFW = \frac{\text{cash+ receivables from the banks}}{\text{liabilities in general}}

III. THE VALUES OF THE ASSETS AND LIABILITIES

The assets of the bank are the property resources of the reliably determined value controlled by the bank. Liabilities are the financial source of assets.

1) the rate of the structure of the quality of the credit wallet = \frac{\text{credit at risk}}{\text{total credit}}

Credits at risk (Zalewska, 2007), are:
- the credits below standard which payment is questionable, and the delay in repayment is from 1 to 3 months,
- the questionable credits, these are the receivables with the delay of repayment from 3 to 6 months,
- the restricted credits which repayment conditions were renegotiated,
- the lost credits.
The rate of the effectiveness of the credits
\[ \text{the rate of the effectiveness of the credits} = \frac{\text{the income from credits}}{\text{the average credit status}} \]

3) the rate of the reserves for the credits at risk
\[ \text{the rate of the reserves for the credits at risk} = \frac{\text{the reserves for the credits at risk}}{\text{the credits in general}} \]

4) the rate of the share of the credits in the assets
\[ \text{the rate of the share of the credits in the assets} = \frac{\text{the average credit status}}{\text{the average assets status}} \]

5) the rate of the share of the revenue assets in assets in general
\[ \text{the rate of the share of the revenue assets in assets in general} = \frac{\text{the revenue assets}}{\text{the assets in general}} \]

6) the rate of the own capital
\[ \text{the rate of the own capital} = \frac{\text{the capital (the own funds)}}{\text{assets in general}} \]

7) the rate of the deposits
\[ \text{the rate of the deposits} = \frac{\text{the stakes and the deposits}}{\text{the liabilities in general}} \]

8) the rate of the creativity
\[ \text{the rate of the creativity} = \frac{\text{the credits in general}}{\text{the deposits in general}} \]

9) the rate of the coverage of the fixed assets with the equity capital
\[ \text{the rate of the coverage of the fixed assets with the equity capital} = \frac{\text{the fixed assets}}{\text{the own capital}} \]

10) the rate of the share of fixed capital
\[ \text{the rate of the share of fixed capital} = \frac{\text{the fixed capital}}{\text{the liabilities in general}} \]

The fixed capital is the equity capital, the current profit and from the past years, reserves and subordinated liabilities.

IV. THE ARTES OF PROFITABILITY

The profitability is the measure of efficiency. The rates which measure it, express the excess of revenue over the costs, therefore the bank’s financial result.

1) \[ \text{ROA (return on assets)} = \frac{\text{the financial result}}{\text{the assets in general}} \]

2) \[ \text{PM (the rate of margin’s profit)} = \frac{\text{the financial result}}{\text{revenues}} \]

3) \[ \text{the rate of interest margin} = \frac{\text{the interest income}}{\text{the average condition of the assets}} \]

4) \[ \text{the rate of non-interest margin} = \frac{\text{non-interest income}}{\text{the average condition of the assets}} \]

5) \[ \text{ROS (return on sales)} = \frac{\text{the financial result}}{\text{the revenues}} \]

6) the rate of the level of costs
\[ \text{the rate of the level of costs} = \frac{\text{the costs in general}}{\text{income}} \]

7) \[ \text{ROE (the return on equity)} = \frac{\text{the financial result}}{\text{the equity capital}} \]

The rates of profitability of the bank create the most commonly used tools while analyzing its financial condition. They can be divided into two groups:

- the synthetic indicators of the high degree of aggregation of information and big information capacity, reflect the activity of the bank comprehensively
- the partial indicators of the low degree of aggregation of information and the small information capacity. They determine the specific segment of the bank’s activity.

The division into these two groups enables the decomposition of the selected rate. It is dividing it into the detailed indicators which form it and determining the hierarchy between them. It is often so that the decomposition of the indicator is presented graphically in the form of the tree and the established structure is called pointer pyramid.

The most commonly known system of decomposition build for the profitability index is the pyramid of Du Pont’s which combines the data of profit and loss account and the balance sheet in synthetic measures. The starting point is presenting the return on equity in the form of the product of two partial indicators which are the return on assets (ROA) and the rate of equity ratio of the assets named equity multiplier (EM). Therefore, it can be written down:

\[ \text{ROE} = \text{ROA} \times \text{EM} \quad (1) \]

where
\[ \text{EM} = \frac{\text{assets in general}}{\text{equity capital}} \]

In accordance with the established rules the value EM should be of about 16.5, which means that the equity capital should be of about 5% of balance sheet total.

From the formula (1) states out that the value of the ROE indicator is depended on the profitability of the assets and also on the participation of own capital while financing of
the bank’s operations. The increase of the value of the EM multiplier means the smaller usage of the own capital and the bigger share of the foreign capital as the source of financing. In the case of too low multiplier, the bank is recognized as the unreliable. Too higher multiplier makes it impossible to obtain the attractive rate of return. The role of the board is remaining it on the optimal level.

The next step of the development of Du Pont’s pyramid is the decomposition of the return on equity (ROA). It is factorised into the product of two factors which are the rate of margin’s profit (PM) and the rate of usage of the assets (AU). Therefore, it can be written down:

\[ \text{ROA} = \text{PM} \times \text{AU} \]  

where

\[ \text{AU} = \frac{\text{incomes}}{\text{assets in general}} \]

The value of the PM rate determines the amount of profit generated by the incomes resulting from the basic activity of the bank. The value of AU characterizes the bank’s income potential. It is depended on the assets’ management, their structure and the interest rates.

In the final effect taking into consideration formula (1) and (2) the profitability index of the equity capital can be expressed in the following mathematical formula:

\[ \text{ROE} = \text{PM} \times \text{AU} \times \text{EM} \]  

The further development of Du Pont’s pyramid is the decomposition of the rate of margin’s profit (PM) into the following factors:
- financial result,
- operational incomes,
- assets.

The application of pyramidal layout of financial indicators in the financial analysis of the bank enables (Kopinski, 2008):
- establishing the directions and the methods of achieving the particular purpose in the layout by the synthetic indicator,
- quantizing the mutual relationship of partial indicators and the connections of these indicators with the synthetic indicators,
- establishing of the place of the particular indicators in the system of the measures of the results of the activity of the bank.

V. THE RATE OF THE EFFECTIVENESS OF THE USAGE OF THE RESOURCES (THE PRODUCTIVITY INDEX)

The productivity is the relationship between the achieved effects by the bank and the expenditures paid.

1) the rate of the wage efficiency = \( \frac{\text{personnel costs}}{\text{the average assets’ condition}} \)

2) the rate of the participation of the costs of action in the assets = \( \frac{\text{salary costs} + \text{amortization} + \text{the remain general costs}}{\text{the average balance of assets}} \)

3) the rate of the efficiency of the net profit for 1 employed = \( \frac{\text{net financial result}}{\text{the average state of the employment}} \)

4) the value of the deposits of every employed one = \( \frac{\text{the average condition of the deposits}}{\text{the average state of the employment}} \)

5) the value of the credit per 1 employed one = \( \frac{\text{the average credit status}}{\text{the average state of the employment}} \)

6) the productivity of the assets = \( \frac{\text{the financial result}}{\text{the average state of the assets}} \)

7) the productivity of the wages = \( \frac{\text{the balance sheet total}}{\text{staff expenses}} \)

8) the balance sheet total for 1 employed = \( \frac{\text{the balance sheet total}}{\text{the number of employed}} \)
VI. THE RATES OF STOCK MARKET

1) The profitability ratio per 1 sharei = \frac{\text{net profit}}{\text{the number of stocks}}

2) The dividend rate in net profit = \frac{\text{the dividend per 1 stock}}{\text{net profit}}

3) The company accounting value per 1 stock = \frac{\text{accounting value}}{\text{the number of stocks}}

4) The rate of market price of P/E stocks = \frac{\text{the share price}}{\text{the net profit per 1 stock}}

5) The dividend rate = \frac{\text{the dividend per 1 stock}}{\text{the share price}}

6) The rate of the participation of the level of value of the stock in the book equity = \frac{\text{the level of the value of the stock}}{\text{the book equity per one stock}}

Results and discussion

I. THE RATE OF CAPITAL ADEQUACY

1) The solvency ratio is equal to the relationship of the bank’s capital to its assets and current risk-weighted commitments (Iwanicz-Drozdowska, 2005). It is determined in percentage. This measure is to illustrate the degree of the safety of the banking activity. It indicates the possibilities of the protection with the usage of own capitals. It is assumed that the value of 8% is the threshold value of the safety functioning of the bank. The bank which has the good rate, possesses its capital which can cover the possible losses. The low measure testifies the financial difficulties and the insolvency of the bank. The very high measure indicates leading ineffective financial policy by the bank and it testifies the excessive over-belaying and the suboptimal usage of the capital.

II. THE MEASURES CHARACTERISING THE ACCOUNTING LIQUIDITY

1) This measure reflects the bank’s involvement in less profitable, short-term operations. Its observation within time shows the tendencies in the banking activities.

2) It is the measure of liquidity based on the current surplus/deficit. The value of the measure is depended on the way the managing of the financial liquidity in the certain bank and the character of its activity.

3) The measure explores the relationship between the maturing assets and the liabilities required in the certain time interval. The bank has the financial liquidity when:

- the value of the liabilities of the group from I-III (the first degree of requiredness is lower than the value of the assets from I-III group (the first degree of liquidity).
- the value of the liabilities from group IV-VI (the second degree) and the assets of group IV-VI (the second degree) are in approximate relation,
- the liabilities of group from IV-VI cover fully the values of the activities from groups VII-IX.

4-5) The measures by compiling property resources in the bank with its liabilities determine the financial possibilities of the bank in the situation when the deposits are suddenly withdrawn.

6) The value of the measure determines the possibilities of the share of the pecuniary measures collected by the bank, the receivables from the other banks and also securities in the regulating of withdrawals for depositors and other obligations.

III. THE VALUES OF THE ASSETS AND LIABILITIES

1) This rate determines the share of the credits at risk in the total amount of the credits. Its increase means the increase of participation of credits at risk in the wallet, the forecast the increased deductions for special provisions and the increased losses of the bank. The incurred losses of the bank reduce its own capital, therefore they have the negative effect on its safety. The actions taken by the bank should be focused on the minimalisation of this rate.

2) The value of the rate reflects the quality of the credit wallet. Its increase can be obtained by using more favorable structure of interest rates.
with the simultaneous reduction of the funds for the credit activities.

3) It is the measure of reserves for credits held by the bank especially for the credits at risk; it determines the possibilities of the absorption of the losses. The reserves which are too high reduce the amount of financial resources which bank can allocate for further credits, therefore they reduce its revenues.

4) The share of the credits in the assets of the bank decides of the quality of the assets. The high value of the rate testifies that the bank conducts risky credit activity.

5) With the help of this tool it is possible to determine the level of the assets which are oriented for generating the bank income. The higher obtained value is, the higher potential in obtaining the margin of the bank is.

6) The rate serves for the analyzing of the values of the liabilities. It is the measure of the share of constant source of financing of the bank. It testifies about the protection against insolvency and about the capabilities of possible coverage of losses resulting from the conducted activity of the bank. The value of the rate informs about the level of the protection of deposits against the loss of financial resources.

7) The stakes and the deposits are the main source of financing the credit activity of the bank. When the deposits grow, the bank has greater credit possibilities, therefore the value of the rate is increasing.

8) This measure determines the degree of use of the deposits obtained by the bank for the financing of the credits. The safe functioning of the bank provides the rate on the level of 0.7-0.8.

9) The value of the rate let evaluate in what degree the bank follows the rule of full its capital coverage of the bank’s fixed assets.

10) It is the measure of the stability of the liabilities. It testifies about the financial policy led by the bank. The low value of the rate is the result of the conservative actions. The high value of the rate proves the pro-development policy.

IV. THE ARTES OF PROFITABILITY

1) In the nominator there can be both gross value and the net value. The measure informs about the efficiency of the assets, therefore about the income potential of the bank. It should exceed 1 %, which means that 1 zloty brings more than 1 penny profit. The higher the indicator is, the better financial condition of the bank is. In the proper bank functioning the nominator increases, the denominator is more constant. ROA reflects the bank policy in the field of assets management. The raising of its value can be obtained by the improvement of financial result by increasing the interest rate margin and the commission or the reduction of costs.

2) While establishing the value of the measure the net income is included. This value determines the level of profit generated by revenues resulting from the basic activity of the bank. The value of the PM rate should always be higher than the value of the ROS rate.

3) The interest margin is the difference between the interest income which the bank obtained on the assets and the interest costs incurred on liabilities. The higher the value of the rate is, the better situation of the bank is.

4) This tool serves for analyzing different than the interest income of the bank obtained for example from banking fees and commissions.

5) The rate expresses the relationship of the financial result to the sum of the income from the interests bank commissions, shares, securities, the results of the financial operations and the exchange. It reflects what part of the income remains at the disposal of the bank after covering of the costs in the case of making the calculations for the gross result or after covering the costs and the taxes when the netto result was taken. In practice most often the value of the ROS rate is determined on the basis of the financial gross result in the situation when the comparative analyses of the group of banks is carried out; the netto while the assessment of the single bank is conducted.

6) The rate reflects the share of costs incurred in the general incomes. It informs what amount of financial result generates 1 zloty of the costs incurred by the bank. The lower the value of the rate is, the higher the assessment of the bank’s activity is.
7) This financial instrument evaluates the effectiveness of the invested capital. It determines the profit which corresponds to 1 zloty of the equity capital involved. The higher the value of the rate is, the better, however the value of ROE calculated for the netto financial result, should be equal at least to the inflation rate. This measure determines the scope of the increase in equity. Its growth gives the chance for the development of the bank and the possibility of obtaining higher dividends.

V. THE RATE OF THE EFFECTIVENESS OF THE USAGE OF THE RESOURCES (THE PRODUCTIVITY INDEX)

1-7) The interpretation of the rates of productivity should be based on the criterion of the rationality of the actions in the condition of the functioning of the bank. The rational attempts of raising the rates by lowering the costs of the activity of the bank (the reduction of: employment, trainings of the employees, the savings related to the maintenance of property or the marketing activities) can lead to the loss of the previous position of the bank.

VI. THE RATES OF STOCK MARKET

1) It is the inner rate which determines the value of net profit per 1 emitted share. On the basis of it, the investors can create their strategies.

2) This value determines what part of the net profit, the bank allocates for the withdrawns of the dividends. It is depended on the financial condition of the bank.

3) The rate reflects the accounting value of the bank for 1 its stock.

4) It is the external indicator which illustrates how many times the market value of the stock exceeds the net profit for 1 stock. It determines the degree of profitability of purchasing shares.

5) This measure shows the level of the income which the shareholder receives from 1 stock.

6) The computed value informs how much the investor pays for 1 zloty of the assets.

Conclusions

The method of financial analysis based on the calculations of the rates on the data included in the bank financial statements and its comparable assessment in time, is used in the process of making the decisions concerning the efficient operations of the bank. It represents the development of the preliminary analysis of financial statements. It serves for the synthetic analysis of different aspects of the activity of the bank and it enables the unambiguous assessment of its situation. The advantage of this method is the summary character of the rates and the possibility of their selection depended on the needs and the interests of the receivers. The value of the rates concern the information about the activities taken by the ban, they determine its financial condition. The ratio analysis creates the possibility of the comparison efficiency of the activities of the particular banks, including the banks of different sizes. The disadvantage of this method is the fact that the majority of the rates do not have the optimal value. Just a compilation of designated values with the rates from the previous periods or the rates of different banks, enables the objective assessment. The ratio analysis should be completed with the other research tools; then it will give the complete picture of the economical and financial situation of the activity of the bank.

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