

## ФИНАНСЫ И НАЛОГООБЛОЖЕНИЕ

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### TRADITIONAL METHOD OF ASSESSING ECONOMIC EFFECTIVENESS OF BANKS

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*The coefficient-based analysis is the most common method of measuring the results of business activities of each economic entity, including banks. By means of coefficient, one can assess various aspects of economic activities. These coefficients are also used to assess the effectiveness of bank activities. At the same time, it should be remembered to ensure that the selected coefficients carry relevant economic content. They should also be correlated with the objective of a research and the degree of details it is expected to yield. This paper is aimed at presenting the classical method of measuring economic effectiveness of banks that takes advantage of coefficients based primarily on the data from financial statements. These coefficients are presented in the theoretical part of the paper according to the method of referring them (to the major categories appearing in financial statements), i.e. they are divided into coefficients of operating assets, revenues and capital. The remaining coefficients that could not have been unequivocally classified in any of the groups are referred to as "other" coefficients. In the empirical part, the paper presents a short analysis and assessment of economic effectiveness of the banking sector in Poland between 2005 and 2011.*

#### 1. Introduction

The analysis of bank activities constitutes one of the basic instruments that support the decision-making process in a bank. Up to now, accountancy methods base on coefficient analysis are the most popular and most frequently implemented approach to the assessment of bank activities in Poland. In this paper, these methods shall be referred to as traditional or classical methods.

Appropriate selection of coefficients used for analysis constitute an important problem in the traditional approach. The selection should depend primarily on the objective of the analysis and the level of detail expected to be reached. Coefficients should be selected to ensure they carry a given economic content, corresponding to the assumed research objective. There is a wide range of coefficients that can be calculated on the basis of financial statements. They can be used to characterize synthetically various economic aspects of business activities of enterprises (Sierpińska and Jachna, 1994, p. 78). However, it is not the number of coefficients that is decisive for the quality of an analysis, but their appropriate selection from the point of view of the performed analysis and the ability to correctly interpret them. The number and selection of coefficients should depend on the scope and the level of detail reached in the performed analysis. In banking practice, a set of over a dozen standard coefficients is used. It should be added that, apart from the measurement of effectiveness, the assessment of liquidity and solvency and the evaluation on the public capital market are also areas important for the assessment of bank activities.

Specialist literature discusses various approaches to defining efficiency (productivity) and various methods of its measurement. In the classical approach, the majority of economists assume the commonly known principle of economic efficiency – i.e. rational action – to be the basis of theoretical and practical considerations concerning the effectiveness of production. The principle takes on two forms, namely: that of the principle of maximum productivity (assuming that the maximum objective is attained with determined resources) and that of the principle of resources saving (assuming a given objective is realized with the minimum resources).

Formally, productivity in this approach is expressed as a quotient of achieved effects (appropriately aggregated) divided by incurred expenditures (also in an aggregated form). In addition, it is possible to treat such expression as coefficients of total or partial productivity. The total effectiveness is determined by the ratio of the total achieved effects to all incurred expenditures, while the partial productivity is defined as the relation between given expenditure and effect that corresponds to the research objective. The method of determining expenditures and effects of financial institutions, however, is the essential problem that has been solved yet unequivocally neither in literature, nor in practice, which hinders considerably any analysis. As a consequence, various approaches to effectiveness assessment are implemented.

The notion of effectiveness has no unequivocal economic content. As noted by E.C. Pasour, effectiveness may assume a precise meaning only in case one assumes optimum performance criteria correlated with appropriate assumptions. However, the notion loses its concrete meaning in the case of real business activities, i.e. in the conditions of uncertainty and significant costs of information acquisition. Thus, it has a subjective character and

it cannot be defined or measured independently of the objectives and knowledge of the analyst (see: Pasour, 1981, p. 135). (Additionally, in order to properly (correctly) interpret the empirical scope of the notion of effectiveness, one should use appropriate points of reference (e.g. assumed or assessed normative values).

In the simplest case, one can face a single effect and a single expenditure. The relation between them is the simplest measure of effectiveness. Its significance, however, is of purely theoretical character, as the actual economic practice involves both multiple expenditures and multiple effects. In case there are  $m$  expenditures and  $n$  effects, the measurement of effectiveness can be presented in the form of a quotient of the sum of  $n$  effects and the sum of  $m$  expenditures.

This paper is aimed at presenting the traditional method of measuring economic effectiveness of banks that takes advantage of various types of coefficients, based primarily on the data from financial statements. This paper discusses these coefficients, while dividing them according to the method of referring them to the major categories appearing in financial statements. In the final part, the paper also presents a short analysis and assessment of economic effectiveness of the banking sector in Poland.

## 2. The Operating Assets Ratios (OAR)

When effectiveness is presented within the framework of expenditures-effects, it is possible to construct appropriate relations between empirical quantities that express effects acquired within the process of economic activities and the quantities that constitute incurred expenditures. They allow one to synthetically grasp the most important information contained in financial statements, while they also make it possible to carry out comparisons with appropriate reference databases such as, for instance, normative quantities, postulated quantities, quantities assumed in a plan, attained in former periods or by similar banks.

The following belong to the basic relations in the coefficient-based analysis:

- selected items of assets to selected items of liabilities, and vice versa,
- the profit of selected groups of assets and capital,
- incomes and costs in relation to particular items of assets and liabilities.

In specialist literature, one can find multiple methods of classifying coefficients of effectiveness. For instance, M. Iwanicz - Drozdowska divides them into four groups (see: Iwanicz – Drozdowska, 1999, p. 64):

- the profitability coefficient,
- the margin coefficient,
- the result loading coefficients,
- the employment effectiveness coefficients.

On the other hand, B. Gruszka distinguished only two groups of coefficients: profitability coefficients and operating coefficients (see: Jaworski, 2000, p. 272 – 282).

This paper shall present a division of operating coefficients according to their reference method that is commonly implemented in the countries with free market economies, including Poland. Having assumed such criterion, one can distinguish three groups of coefficients (ratios) (see: Gołajewska and Wyczański, 1994, p. 2 – 3):

- the operating assets ratios;
- the operating profits ratios;
- the operating equity ratios.

On account of the assumed methodology of calculating the above coefficients, compliant with the standards of OECD countries, they are convenient instruments that allow one to compare the effectiveness of actions, not only between home banks, but also between foreign ones. In the analysis of effectiveness, however, one should take into account certain factors that modify the coefficients' values. Among them, one can list primarily the following: the capital structure, the business profile, the scope and quality of services, the differences in the principles of accounting<sup>1</sup>.

In the first groups of coefficients constituted by operating assets ratios, particular values of revenues and costs are referred to average assets in a given accounting period. The advantage of this group of coefficients consists in the possibility of using them in comparisons with the actual interest rates of income or the cost-burdening rate that are implemented in the management of assets and liabilities of a bank. On the other hand, they have a significant disadvantage, consisting in an excessive influence of the scope of activities of a bank and its structure of assets and liabilities on the coefficient values, as well as in stressing the role of a bank as a financial intermediary services provider, while skipping its role as an institution that offers account settlement services (such as, for instance, maintenance and servicing of various types of bank accounts, purchase of cheques and bills of exchange).

The Return On Assets (ROA) belongs to the most synthetic as well as most important measures of effectiveness of bank activities included in this group of coefficients:

$$ROA = \text{net profit} / \text{average value of assets} \times 100.$$

<sup>1</sup> More on the subject can be found in: Gołajewska and Wyczański, 1994, p. 3 – 4.

This is a percentage relation of the net profit<sup>2</sup> to the value of average assets, which provides information on the amount of the net profit yielded by each unit of bank assets in a given accounting period. This coefficient also shows the effectiveness of the bank management in taking advantage of means to generate profit. Its level is directly proportional to the size of the net profit attained by a bank and inversely proportional to the size of assets that are managed by the bank. As everybody knows, the final level of profit is determined by the results acquired in particular types of bank activities. Therefore, it is also desired to calculate measures of effectiveness that refer to particular component elements of revenues and costs of bank activities.

At this point, it is worth to point out the differences between the principles of bank accounting and the principles of taxation. In the light of the act on the income tax on legal persons<sup>3</sup>, allowances on appropriation funds do not constitute a cost of acquiring revenues. Therefore, they are not included in the basis of taxation. Thus, banks acquire a higher gross profit and pay higher taxes, while they establish reserves only from the profit after taxation. In practice, it may occur that a bank shows a loss (a negative net financial result) on the basis of the ledgers, while it simultaneously acquires a net profit subject to taxation.

One can enumerate the following among the main categories of revenues and costs that influence the net financial result: interest revenues, non-interest revenues, (general) operating costs, allowances on appropriation funds and taxation levies. These quantities referred to average assets constitute consecutive measures of effectiveness that indicate particular sources of revenues and costs and provide the possibility of comparing an entity with other banks. They may also be referred to average interest bearing assets.

Interest revenues and operating costs influence the level of *ROA* most. The interest margin coefficient (interest revenues / average assets) is a very important instrument to measure profit potential of a bank. It also expresses the ability of a bank to manage effectively its means. If interest revenues and expenditures are referred to average assets, one can acquire successive effectiveness coefficients. By broadening the analysis further on, one can refer to average interest bearing assets.

The control of general costs is a very important function of managing profit generation. By dividing them into component elements and referring them to interest bearing assets, one gets successive measures for analysing effectiveness from the point of view of costs of bank activities and the measures are control parameters of the management of production factors. In order to perform a more detailed analysis, these coefficients may be expanded further on to include particular elements of the bank results account.

Apart from the measurement of the size and interpretation of particular coefficients, the analysis of the tendencies of coefficient changes over time is a important issue within the assessment of effectiveness of bank activities. For instance, if the margin of operating costs continues to grow, together with depreciation, while the interest margin continues to decrease, this may constitute a serious threat for future results of a bank.

### 3. Operating Equity Ratios – OER

The operating equity ratios belong to the second group of coefficients for assessing the effectiveness of a bank. They refer particular items of revenues and costs, paid taxes and the profit to the size of the average bank equity in an accounting period (see: Gołajewska and Wyczański, 1994, p. 5). It is worth pointing out at this point that – both in specialist literature and in practice – only the gross and net profit is used in relation of equity. However, no other coefficients that would result from the above definition are presented and used in analyses.

The return on equity (*ROE*) is considered to be the most important coefficient in this group:

$$ROE = \text{net profit} / \text{equity} \times 100.$$

The *ROE* coefficient is considered to be the basic measurement of effectiveness from the point of view of shareholders (capital owners). It informs about the size of profit per equity unit and thus it shows the possibility of payment of dividends to shareholders and the ability to increase the equity of a bank and its potential for development. Moreover, it can also be compared to the rates of revenues acquired from various types of alternative investments.

The *ROE* coefficient is subjected to appropriate decomposition, in order to determine the causes of changes of its value, as in the case of the *ROA* coefficient. An example of the simplest decomposition of the *ROE* coefficient is found in the Du Pont model (the 1<sup>st</sup> phase of decomposition) that is based on the correlation between the *ROE* coefficient and the *ROA* coefficient. In reality, *ROE* is higher than *ROA* (*ROE* = *ROA* only when the financial activity is carried out exclusively with equity). To put the equality sign between these coefficients (this is the assumption, which the Du Pont's model is based on), one should introduce a corrective coefficient that describes the relation of assets to equity and is referred to as the financial leverage or equity multiplier (*EM*).

$$ROE = ROA \times EM = (\text{net profit} / \text{assets}) \times (\text{assets} / \text{equity}).$$

Then, one can decompose the *ROA* coefficient:

$$ROA = (\text{net profit} / \text{operating revenues}) \times (\text{operating revenues} / \text{assets}).$$

<sup>2</sup> Gross profit can also be taken into account in the analysis.

<sup>3</sup> Act of 15<sup>th</sup> February 1992 on income tax legal persons, Dz. U. 1993, No. 106, item 482, as further amended.

In this manner, one acquires a new formula for calculating the *ROE* coefficient (the 2<sup>nd</sup> phase of decomposition):

$$ROE = ROA \times EM = PM \times AU \times EM = (\text{net profit} / \text{operating revenues}) \times (\text{operating revenues} / \text{assets}) \times (\text{assets} / \text{equity}).$$

In the above formula, the relation of net profit to operating revenues is defined as the profit margin (*PM*) of the bank, while the relation of operating profits to assets is defined as the assets utilization (*AU*) coefficient.

Each of the three components used in this formula informs about different aspects of bank activities. The profit margin of the bank reflects the effectiveness of the policy of expenditure management and establishment of service prices. The assets utilization (*AU*) reflects the policy of portfolio management (especially the structure and revenue rate on bank assets) (see: Rose, 1997, p. 154).

The size of assets owned by a bank and the accumulated equity inform about the scale of operations carried out by the bank and about the abundance of its resources, respectively. Indirectly, they also inform about the safety of transactions with the bank. It is commonly assumed that the greater is value of the relation of equity to assets (i.e. the greater the share of equity in the structure of liabilities), the safer a given bank is. However, an increase of the share of equity in financing assets – with the net profit at a constant level – has an influence on the drop of bank effectiveness expressed with the *ROE* coefficient, and vice versa. It should be pointed out that there is a permanent conflict between the pursuit of growing effectiveness and the pursuit of enhanced safety of a bank. Even a bank with a low *ROA* coefficient may reach relatively high values of *ROE* thanks to efficient use of the financial leverage coefficient (enhanced use of external capital, which involves lower commitment of equity). However, to reach this effect, the costs of acquiring additional capital (the cost of interest) must be lower than the profitability of the total capital (equity and external capital) (see: Sierpińska and Jachna, 1994, p. 106). If the effectiveness indicated by the *ROA* coefficient drops, the bank must take higher risk in the form of an increase of the financial leverage, in order to be able to achieve the desired return rate for its shareholders.

Among the three financial coefficients that influence the level of *ROE*, the financial leverage coefficient has got the highest practical value. It is considered that it should not exceed 16 for banks, as this value is considered to be a limit value that ensures safe development of a bank. However, the more exposed a bank is to risk (e.g. it has an excessive share of bad debts in its structure of receivables), the lower value this coefficient should assume.

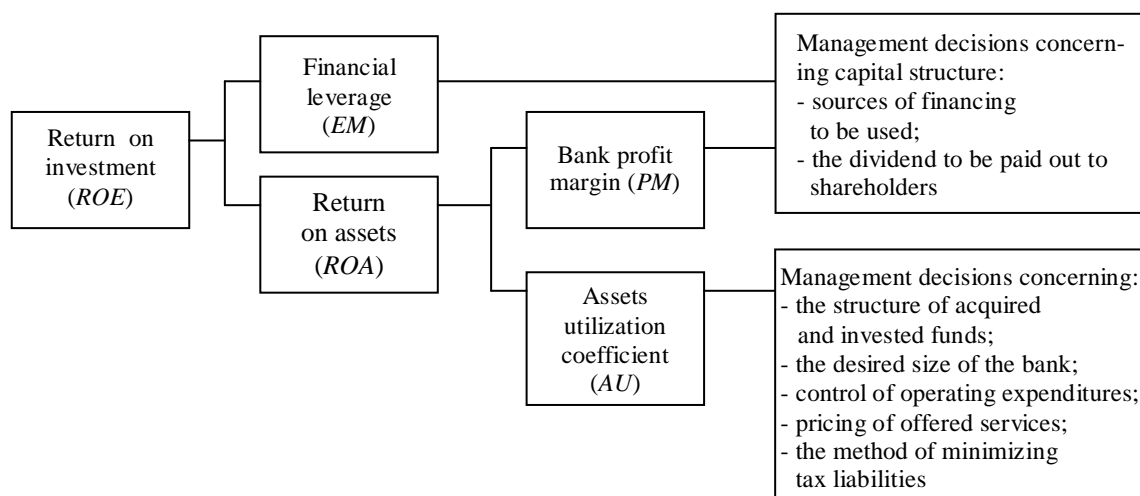


Fig. 1. The elements that determine the return rate acquired on investments of shareholders in a bank (*ROE*)

Source: Rose P.S., *Zarządzanie bankiem komercyjnym*, [Commercial Bank Management], vol. 1, Polish Bank Association, Warsaw, 1997, p. 155.

Specialist literature proposes different solutions in this domain, consisting in different aggregation of revenues and costs of a bank, i.e. in different distribution of the profit margin (*PM*) coefficient and the assets utilization (*AU*) coefficient. The methodology proposed by D. Cole is an example of further decomposition. He broke down the profit margin (*PM*) into four coefficients (see: Jaworski and Zawadzka, 2001, p. 583):

- IER – interest expenses ratio, i.e. the ratio of interest expenses to operating revenues;
- NER – non-interest expenses ratio, i.e. the ratio of non-interest expenses to operating revenues;
- PLLR – provisions for loan losses ratio, the index of reserves on classified claims, i.e. the relation of the balance of establishing and dissolving reserves to operating revenues;
- TR – tax ratio, i.e. the relation of taxes to operating revenues.

Additionally, for purely calculation-related reasons, one has to introduce the income ratio (*IR*) – the coefficient of revenues that is constituted by the relation of operating revenues to operating revenues (always equal to 100 %).

The assets utilization coefficient, in turn, was divided by D. Cole into two elements:

- IER – interest income ratio, i.e. the relation of interest income to assets;
- NIR – non-interest income ratio, i.e. the relation of non-interest income to assets.

On the basis of such decomposition, one can identify the impact of particular categories of costs and taxes on the reduction of the total amount of operating revenues, as well as assess the share of interest incomes and non-interest incomes in the operating revenues of a bank. By means of the coefficients acquired by way of this decomposition, one may assess changes in bank effectiveness, both in time and against the background of a selected group of banks.

#### **4. The Operating Income Ratios (OIR)**

The operating income ratios can also be used to assess the effectiveness of a bank. By definition, they refer particular entries in the profit and loss account (revenues and costs) to the gross income, understood as the result of bank activity increased with the result of the remaining operating activities (see: Getka, 2001, p. 207). In this approach, these coefficients represent the structure of income generation and directions of revenue distribution.

G. Gołajewska and P. Wyczański as well as J. Świdorski define operating revenues coefficients in a different way (see: Gołajewska and Wyczański, 1994, p. 6; Świdorski, 1995, p. 51). According to these authors, revenue coefficients should refer receipts and charges to the gross income, while they define the gross profit itself as the total value of interest revenues (receipts minus charges) and non-interest revenues. The authors count the following among the most important receipts and charges related to the gross income: interest revenue, non-interest revenue, operating charges, allowances on appropriation, tax and the net profit. In spite of these differences, both approaches are implemented in practice, as conformity with analysis objectives is the only condition for construing coefficients for the assessment of effectiveness. Thus, proposed coefficient calculations result from the approaches assumed by particular authors.

In this group of coefficients, special significance is ascribed to coefficients of the share of non-interest revenues, of costs and the net profit to gross revenues. The non-interest costs coefficient informs about the role of a bank as a financial intermediary services provider, which involves primarily the provision of account settlement services, which is not captured by other measurement instruments. Costs coefficients, in turn, indicate potential sources of threats and the presence of reserves, while they also allow for comparisons with other institutions. On the other hand, profit coefficients are particularly useful when making international comparisons.

In view of divergences in classifying allowances for irregular receivables and appropriation, it seems advisable to relate certain quantities of revenues not only to the gross income, but also to the net operating income (the result of bank activities)<sup>4</sup>. It is proposed to calculate net operating coefficients for the following entries of the account of results: allowances on appropriation, the before-tax profit, tax, the net profit. The resultant coefficients are particularly useful for comparing banks in international perspective, especially when tax regulations in the countries under analysis differ or are unknown. These coefficients indirectly allow one to calculate the part of allowances on appropriation that has been recognized by tax offices as the costs of acquiring revenues. Moreover, these coefficients allow for a more detailed analysis of the bank revenues disposal. It should be pointed out that the net operating income is close to the basis of taxation for calculating income tax. Therefore, the tax coefficient provides information on the actual taxation ratio of a bank. It should be added that income coefficients, as operating assets coefficients, are influenced by differences in the structure of liabilities and in banking practices (see: Gołajewska and Wyczański, 1994, p. 6).

#### **5. Other coefficients for assessing bank effectiveness**

Apart from coefficients defined as operating ones, there are examples of other uses of measurement instruments in effectiveness assessment. First of all, one should mention the group of coefficients that assess the effectiveness of banking products and services<sup>5</sup>. They allow one to determine the margin generated by particular products or transactions.

Banking products can be divided into interest-based and non-interest-based. Different methods of effectiveness assessment are implemented for both groups. Assessment of interest-based products and services is founded on the calculation of the interest margin, while assessment of non-interest-based ones – on the calculation of a unit cost. In practice, the effectiveness of interest- and non-interest-based products is assessed by both traditional methods, assessing only transactions carried out by a bank, and market methods that allow one to check, whether a transaction with a client or rather an alternative transaction on an alternative market would be more profitable for a bank. However, it should be pointed out that the assessment of interest-based products

<sup>4</sup> Net operating income here is the amount calculated by deducting operating costs from gross revenues.

<sup>5</sup> An assessment of the effectiveness of a bank should also include an analysis of the effectiveness of banking products and services.

faces difficulties. They result primarily from the fact that it is impossible to correlate each item of assets to a corresponding item of liabilities that would constitute a direct source of its financing. Such assignment is possible only in sporadic cases.

The interest margin and interest spread belong to the basic instruments for measuring effectiveness of banking products:

- interest margin = interest result / (interest) assets<sup>6</sup>;
- interest spread = (interest revenues / interest assets) – (interest costs / interest liabilities).

Apart from the interest margin, the analysis can also use other so-called partial margins that are calculated by referring particular results listed in the profit and loss account to total assets. Among them, one should mention the following (see: Iwanicz – Drozdowska, 1999, p. 67):

- the commission margin, calculated as the relation of the result from commissions to total assets;
- the dividend margin, calculated as the relation of revenues from stocks and shares to total assets;
- the commercial margin, calculated as the relation of the sum of the result from financial operations and exchange operations to total assets;
- the demand margin, calculated as the relation of the costs of operation and depreciation (fixed costs) to total assets;
- the risk (reserves) margin, calculated as the relation of the balance of reserves to total assets;
- the extraordinary operations margin, calculated as the relation of the result from extraordinary operations to total assets.

It should be pointed out that the sum total of all the partial margins yields the ROA coefficient. In the analysis of effectiveness, however, there is no need to implement all the partial margins. Such analysis focuses on the most important ones, such as: interest margin, commission margin, commercial margin, demand margin and risk margin.

Among important margin coefficients, one should count the bank profit margin, calculated as the relation of the net profit to the operating revenues, and the net operating margin, calculated as the relation of operating revenues minus operating costs to total assets.

Data provided exclusively in the profit and loss account are also used to calculate important relations that allow one to assess the activities and condition of a bank. Gross and net profitability coefficients belong to the relations that are most frequently used in practice. They inform about relations obtaining between the gross financial result or the net financial result and total costs:

$$\text{gross profitability coefficient} = \text{gross financial result} / \text{total costs};$$

$$\text{net profitability coefficient} = \text{net financial result} / \text{total costs}.$$

The effectiveness of employment undoubtedly belongs to important areas of bank activities under assessment. This domain is assessed primarily by the personnel effectiveness coefficient and the personnel productivity coefficient. The first one is calculated as the relation of the gross or net financial result to the average number of employees and it is a measuring instrument that is useful to assess the quality of work organization in a bank. The second one determines the size of assets per one employee.

The effectiveness of a bank may also be measured by coefficients constructed to take risk into account, namely: RORAC (*return on risk adjusted capital*) and RARORAC (*risk adjusted return on risk adjusted capital*):

$$\text{RORAC} = \text{result} / \text{capital exposed to risk};$$

$$\text{RARORAC} = (\text{result} - \text{risk premium}) / \text{capital exposed to risk}.$$

The first one presents the return on capital exposed to risk, while the second one takes additionally the risk premium into account.

One can also analyse the effectiveness of bank activities, while taking equity into account, by means of the EVA method (Economic Value Added) or SVA method (Shareholders Value Added). The economic value added is the excess of adjusted financial result over the alternative cost of equity (see: Kimball, 1998, p. 38):

$$\text{EVA} = \text{adjusted financial result} - c \times K,$$

where  $c$  = alternative cost of capital;  $K$  – the amount of used capital.

In specialist literature, the alternative cost of capital is proposed to be assessed in the following manner:

$$c = \text{risk-free interest rate} \times \text{risk premium} \times \beta.$$

The profitability of government securities (treasury bonds and bills) is most often assumed to be the risk-free interest rate. The risk premium, on the other hand, is established at the level corresponding to the scale of

<sup>6</sup> Interest assets are those balance entries (assets) that yield interest revenues.

risk sought by a bank, while its specific character is taken into account. The  $\beta$  coefficient, in turn, reflects the sensitivity of the price of shares to changes occurring in the market (see: Jaworski and Zawadzka, 2001, p. 585).

The shareholder added value (SVA) is the part of the net profit that exceeds the threshold level of the return on economic capital (Uyemura and van Deventer, 1997, p. 21).

Assessments of bank activities also take advantage of rankings that classify particular banks on the basis of one or several selected pieces of information, or a prepared synthetic coefficient that is constructed on the basis of partial measuring instruments. Assessments are often based on the ranking of “The Banker” monthly that publishes each year a list of the 1000 biggest banks in the world. The list of the 500 biggest banks in the world published by the “Euromoney” periodical is another well-known international ranking. The list stresses the size of banks (equity, the size of assets, the net profit) and the effectiveness of their activities (the return on assets, the return on equity)<sup>7</sup>.

In Poland, banks are assessed by means of the so-called SWPB coefficient (synthetic bank standing coefficient). The coefficient is constructed on the basis of four groups of quantitative coefficients (coefficients of the dynamics of branches and selected balance quantities, coefficients of the credit portfolio structure, effectiveness coefficients, financial security coefficients). Additionally, the synthetic coefficient takes into account qualitative coefficients based on specialists' opinions.

It should be stressed that the most vital coefficients are used in practice. The most useful and most often used measures of effectiveness of bank activities are selected from among the described coefficients and presented in table 1 below.

Table 1

Basic coefficients for assessing bank effectiveness

<b>Coefficient name</b>	<b>Calculation formula</b>	<b>Coefficient significance</b>
1. Return on assets (ROA)	Net profit / average size of assets	It informs about the size of the net profit per unit of committed assets
2. Rate of revenue from assets	Operating revenues / total assets	It informs about the degree of assets utilization
3. Operating costs level coefficient	Bank operation costs / total assets	It informs about the size of costs of bank operation per unit of assets
4. Interest profitability of assets	Interest revenues / average size of interest bearing assets	It informs about the share of interest revenues in interest bearing assets
5. Interest profitability of liabilities	Interest costs / average size of liabilities burdened with an interest rate	It shows the average profitability of interest bearing liabilities
6. Interest margin (interest spread)	Interest profitability of assets – interest profitability of liabilities	It informs about the difference between the rate of interest revenues from assets and the rate of interest costs of liabilities
7. Interest margin	Interest result / average size of assets	It informs about the interest result per unit of assets
8. Return on equity (ROE)	Net profit / average size of equity	It informs about the size of the net profit per unit of committed equity
9. Financial leverage	Average size of assets / average size of equity	It informs about relations between assets and equity
10. Revenues profitability	Net profit / revenues from bank activities	It informs about the relation of the net profit to revenues from bank activities
11. Bank profit margin	Net profit / operating revenues	It informs about the effectiveness of expenditure management and service pricing
12. Costs level coefficient	Costs / revenues	It informs about the size of costs per unit of revenues
13. Gross profitability coefficient	Gross profit / total costs	It informs about the relation between the gross result and costs of a bank
14. Net profitability coefficient	Net profit / total costs	It informs about the relation between the net profit and costs of a bank
15. Net profitability of bank activities	Net profit / result from bank activities	It informs about the relation of the net profit to the result from (basic) bank activities
16. Personnel effectiveness	Net profit / average number of employees	It informs about the net result per employee
17. Personnel productivity	Total assets / average number of employees	It informs about the size of assets per employee

Source: statement of author's own.

<sup>7</sup> A modified “Euromoney” methodology was used to prepare the ranking of Polish banks published in *Gazeta Bankowa*, 1993, No. 30.

The next table (2) presents coefficients that are proposed and most often used by the World Bank to assess bank activities. It should be taken into account that they are adjusted to financial statements prepared in other countries. The presented values indicate the quantities that are considered to be advantageous for a middle-sized regional bank in the United States (see: Baltrop and McNaughton, 1995, p. 21).

Table 2

Basic financial coefficient recommended by the World Bank

Coefficient name	Recommended value in %
1. Return on assets	1.00
2. Capital profitability	15.00
3. Net margin	1.25
4. Net interest margin	4.50
5. Revenue from commissions	no recommendations
6. Net operating margin	6.50
7. Administrative costs (% of total assets)	2.00
8. Personnel costs	1.50
9. Other operating costs	3.50
10. Total operating costs	no recommendations
11. Load in virtue of allowances on appropriation funds	0.50
12. Net before-tax profit	2.00

Source: data of the World Bank.

#### 6. Assessment of effectiveness of the activities of the banking sector in Poland between 2005 and 2011

In the period under discussion (2005 – 2011) both the result of banking activities (covering: the result in virtue of interest, the result in virtue of commissions, revenues from shares or stocks and the remaining securities, the result of financial operations and the result of swap entries) and the costs of banking activities (covering remunerations, insurances and other benefits) grew systematically (see diagram 1). It should be stressed that the rate of growth of banking activities in the selected period (the increase by 81 %) was higher than the rate of growth of costs of banking activities (the increase by 53 %).

The highest share in generating the result of banking activities was taken by the interest result and the result in virtue of commissions. In the period from 2005 to 2008, these quantities amounted to the total of over 80 % of the result of banking activities, while the rate of their growth was higher than the growth of the very result of banking activities (58 and 53 %, respectively). The remaining entries had negligible or negative impact on the result of banking activities.

In 2009, the dynamics of the result of banking activities decreased. This decrease was due primarily to a drop of the interest result from 28 012 million PLN (2008) to 26 376 million PLN (2009).

The decrease of the interest result was caused by the reduction of the interest result from operations realized with the non-financial sector. On the one hand, this was due to the fact that deposits grew faster than credits and to the “deposits war” that resulted in a considerable drop in the spread between credit interest rates and deposit interest rates (the average spread dropped from 4.4 % in 2008 to 3.4 % in 2009). On the other hand, however, it was also a result of low margins on credits (especially housing mortgage credits) granted in the period of the credit boom and of an increase of the amount of bad debts that had not generated revenues. As a result, the interest revenues received from the non-financial sector decreased by 0.7 % (from 41.4 billion PLN to 41.0 billion PLN), while the interest costs paid to the non-financial sector increased by 12.3 % (from 16.1 billion PLN to 18.1 billion PLN). As a consequence, the result generated by the operations with this sector decreased by 9.4 % (from 25.2 billion PLN to 22.9 billion PLN). Negative tendencies in the domain of the interest result were intensified by an increase of indebtedness toward the financial sector in the previous periods. The increase combined with a considerable decrease of receivables from this sector led to a negative increase of the result generated by the operations realized with this sector (from minus 3.0 billion PLN to minus 3.7 billion PLN). Although banks recorded an increase of the interest revenues in virtue of owned securities (from 8.6 billion PLN to 9.9 billion PLN) and a decrease of the negative result of operations with the budget sector (from minus 0.8 billion PLN to minus 0.6 billion PLN), this did not compensate for the deterioration recorded in the first two entries. Thus, one can claim that the deterioration of the interest result was mainly caused by the expansive strategy of bank activities in the previous periods, consisting in a very big increase of the credit-granting action that was not supported with a corresponding increase of stable sources of financing with adequate structure in terms of terms and currencies, as well as in the operation with very low margins, which was aimed at acquiring as big a share in the market as



possible. It should be pointed out at this point that the interest result improved clearly in the second half of 2009, which should be correlated with the end of the “deposits war” and with an increase of the credit margins<sup>8</sup>.

A fast expansion of bank activities in the period from 2005 to 2008 resulted in an increase of the operating costs of the banking sector in this period by 41 % (from 17 549 million PLN to 24 815 million PLN). The increase of these costs was caused primarily boiler an increase of personnel costs, that was due to increased employment and a general increase of salaries in the national economy, which resulted in a need to increase the salaries in banks (the competition pressure). As a consequence, the average monthly salary in the banking sector exceeded the amount of 5 000 PLN (5 006 PLN) for the first time in 2007. It should be noted at this point that, in spite of the increase of the operating costs, the increased effectiveness resulted in a situation, where the costs consumed a smaller part of the result of bank activities.

A relatively favourable macro-economic situation and an increase of the scale of activities of the banking sector until the first half of 2008 were reflected by an increase of the financial results of banks. The net financial result of the banking sector in 2007 amounted to 13 674 million PLN and it was higher by 27.8 % than in 2006, which was a historical record. However, in the fourth quarter of 2008, the results of the banking sector strongly deteriorated.

The net result in this quarter (1.3 billion PLN) amounted to mere 30 % of the result acquired in each of the preceding quarter and it was lower by almost 60 % than the result in the analogous period of 2007<sup>9</sup>.

Poor results of banks in the second half of 2008 and in 2009 were caused by a very high increase of deductions resulting from a deteriorated financial standing of a part of credited parties and by a decrease of the interest result (and, to a small extent, by a small increase of the operating costs). The remaining areas of banking activities had a positive impact on the results of banks. Compared to 2008, the year 2009 witnessed a more than double increase of the negative balance of reserves/appropriations in virtue of the value impairment from 5.3 billion PLN to 12.0 billion PLN (in the successive quarters of 2009, the net appropriations amounted to 2.6 billion PLN, 3.1 billion PLN, 2.6 billion PLN and 3.7 billion PLN)<sup>10</sup>. 2011 witnessed a considerable increase of the net profit of the banking sector. The main source of this improvement was due to an increase of the interest result that grew by 13.1% (i.e. 4 034 billion PLN), compared to 2010. A decrease of the negative balance of reserves/appropriations by 2 568 billion PLN, i.e. by 22.9 %, was the second factor that was decisive for the strong improvement of the financial results of banks<sup>11</sup>.

When assessing the effectiveness of the activities of the banking sector in Poland in the period under analysis, one may distinguish two periods: the first one, lasting until the end of the first half of 2008, when the positive financial results were reflected by improved coefficients that measure the effectiveness of bank activities, and the second one, lasting from the second half of 2008 on, when one observes a considerable deterioration of these coefficients, followed by their slow improvement (see table 3).

The return on assets (ROA) in the period 2005 – 2007 was maintained at a stable level and amounted to 1.6 to 1.7 %. The return on equity (ROE) coefficient in the same period was also stable and it was maintained at the level from 20.60 to 22.50 %. In spite of increased competition until 2008, the interest margin was also maintained at a high level within the range from 3.1 to 3.3 %.

When assessing the effectiveness of the banking sector, one should focus in particular on the systematic decrease of the operating costs coefficient, irrespective of the level of financial results. In the period 2005-2011, the level of this coefficient decreased from 61.50 to 50.85 %.

The effectiveness of business activities of the banking sector may also be assessed on the basis of the measures of labour effectiveness (most often calculated per one employee). Here belongs, among others, the coefficient of the size of assets per one employee. In the period 2005 – 2011, it grew systematically from 3.61 to 7.33 million PLN. In turn, the level of gross revenue generated by 1 employee in the period 2005 – 2007 grew, from 71.49 to 100.1 thousand PLN, only to drop during the next years all the way down to 69.96 thousand PLN.

In spite of poor results in the second half of 2008, banks still managed to maintain a high level of some of the coefficients of effectiveness of business activities, or even to improve them in some domains. In particular, the coefficient of operating costs improved its value, as it was reduced from 56.3 to 54.44 %. Thanks to an increase of the interest rates, the interest margin increased from 3.10 in 2007 to 3.14 % in 2008. However, banks

<sup>8</sup> *Raport o sytuacji banków w 2009 roku [Report on the condition of banks in 2009]*, Urząd Komisji Nadzoru Finansowego [Financial Supervision Authority Office], Warsaw 2010, p. 36.

<sup>9</sup> See: *Raport o sytuacji banków w 2008 roku [Report on the condition of banks in 2008]*, Urząd Komisji Nadzoru Finansowego [Financial Supervision Authority Office], Warsaw 2009, p. 59.

<sup>10</sup> See: *Raport o sytuacji banków w 2009 roku [Report on the condition of banks in 2009]*, Urząd Komisji Nadzoru Finansowego [Financial Supervision Authority Office], Warsaw 2010, p. 37.

<sup>11</sup> See: *Raport o sytuacji banków w 2011 roku [Report on the condition of banks in 2011]*, Urząd Komisji Nadzoru Finansowego [Financial Supervision Authority Office], Warsaw 2012, p. 65, 67.

did not manage to maintain the hitherto level of the return on equity coefficient (ROE) that decreased in 2008 almost three times (from 22.5 in 2007 to 7.40 % in 2008).

Unfavourable tendencies were observed all through the next year (2009). In general, it was the worst year in the activities of the banking sector in terms of financial results, which had a very negative impact on numerous coefficients of effectiveness of the sector activities (see table 3).

An increase of the financial result combined with maintained control of the costs translated into an improved values of the measures of the effectiveness of business activities in the period 2010 – 2011. The following could be observed in particular:

- an increase of the interest margin from 2.57 in 2009 to 2.84% in 2011;
- a decrease of the coefficient of the share of operating costs in average assets from 2.41 in 2009 to 2.18 % in 2011;
- a decrease of share of the balance of reserves/appropriations in average assets from 1.14 in 2009 to 0.63 % in 2011;
- an increase of the ROA coefficient from 0.81 in 2009 to 1.28 % in 2011;
- an increase of the ROE coefficient from 8.37 in 2009 to 12.78 % in 2011.

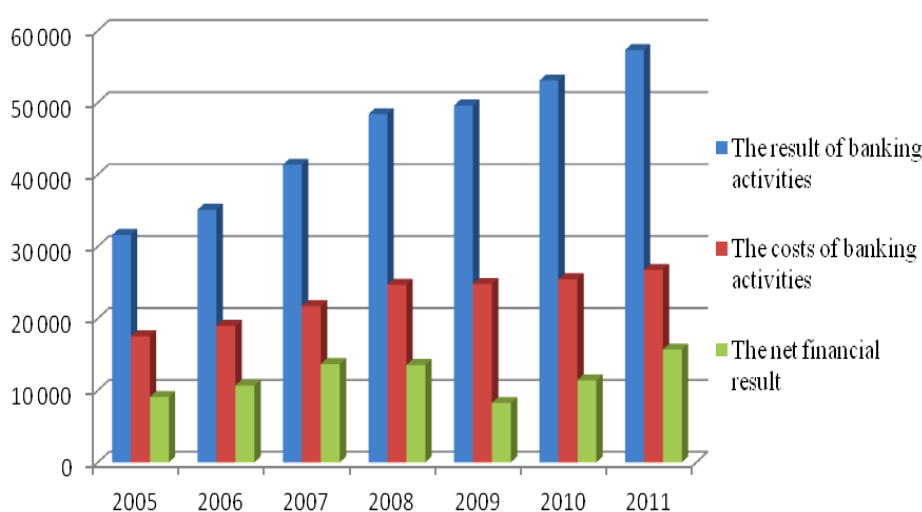


Fig. 2. The main categories of the results account of the banking sector between 2005 and 2011 (in billion PLN)

Source: *Raport o sytuacji banków w 2011 roku (2010, 2008, 2007)* [Report on the condition of banks in 2011 (2010, 2008, 2007)], Urząd Komisji Nadzoru Finansowego [Financial Supervision Authority Office], Warsaw 2012 (2011, 2009, 2008).

Table 3

Selected measures of the effectiveness of the banking sector in Poland between 2005 and 2011

Years	2005	2006	2007	2008	2009	2010	2011
ROA (net result/average assets)	1.60	1.70	1.70	1.54	0.81	1.03	1.28
ROE (net result/average core capital)	20.60	22.50	22.50	7.40	8.37	10.21	12.78
Operating costs coefficient (costs/revenues)	61.50	59.20	56.30	54.44	54.21	52.26	50.85
Result from banking activities/average assets	5.62	5.54	5.62	5.43	4.83	4.78	4.66
Interest margin	3.30	3.30	3.10	3.14	2.57	2.79	2.84
Bank operation costs / average assets	3.12	2.57	2.96	2.75	2.41	2.30	2.18
Assets per 1 employee (in million PLN)	3.61	4.32	4.76	5.86	6.07	6.59	7.33
Gross profit per 1 employee (in thousand PLN)	71.49	82.50	100.1	97.45	69.96	88.78	114.07

Source: *Raport o sytuacji banków w 2011 roku (2010, 2008, 2007)* [Report on the condition of banks in 2011 (2010, 2008, 2007)], Urząd Komisji Nadzoru Finansowego [Financial Supervision Authority Office], Warsaw 2012 (2011, 2009, 2008).

### Conclusions

The traditional methods are the methods of assessing the effectiveness of banks that are most often implemented in practice. The classical approach to the measurement of effectiveness – most often defined by a relation of the acquired effect to the incurred expenditure (or vice versa) – allows one to construct multiple economic and accounting coefficients.

From the formal point of view, each coefficient is a relation of appropriate economic (accounting) quantities. On the other hand, in terms of its content, each coefficient – depending on the used quantities – provides specific information about an examined fragment of the economic reality. For instance, the ROA coefficient shows the net profit generated by a single unit of committed assets, while the costs level coefficient (costs/revenues) shows the costs incurred in order to acquire one unit of revenues.

Particular coefficients characterise only a selected fragment of the economic reality. Some of them do it in a more detailed manner or in a more general manner. However, there is an essential problem, namely it is impossible to assess banks in an overall and unequivocal manner by means of these coefficients. An attempt at constructing a synthetic measure covering the whole of business activities shall always be of subjective character. Moreover, their values are not normalized, which means that they have no bottom limits or top limits. Neither does any of the coefficients indicate a model of effectiveness, nor does it inform about the level of ineffectiveness of a given entity. Undoubtedly, the biggest advantage of assessing of business activities by means of coefficients consists in the simplicity of involved calculations.

When assessing the effectiveness of the activities of the banking sector in Poland between 2005 and 2011, one should differentiate two essential periods. In the first period – until the end of the first half of 2008 – the economic results of banks increased, which translated into an improvement of the measurements of the effectiveness of bank activities. In mid 2008, due to the financial crisis, the banking sector experienced negative tendencies that resulted directly in a considerable decrease of the financial results. The results, in turn, were reflected in a decrease of the values of the majority of coefficients of the effectiveness of business activities. The biggest breakdown took place in 2009. After this year, the financial results improved systematically, which involved an improvement of the effectiveness coefficients. It should be underscored that the worldwide financial crisis of the last years essentially did not have a drastic impact on the financial standing of the banking sector in Poland.

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