

NEW APPROACHES OF PERFORMANCE ESTIMATION OF UKRAINIAN COMMERCIAL BANKS

In the article the different ways of measuring banks' performance, including traditional performance metrics and more advanced methods and their comparative analysis has been done. Based on econometric modeling of panel data models the more important determinants of banks' profitability has been estimated and the directions of the enhancing banks' long-term performance has been proposed.

Keywords: profitability measurement, performance, commercial bank, econometric model, return on equity, indicators.

Introduction and the analysis of the last publications. The last Global financial crisis mainly caused by banking institutions, reveals flaws in global financial system. In order for the global economy to move forward, the financial system needs to be redefined. During such challenging time it is extremely important for banks, as key players on the global financial arena, to become less risky and more successful. Thus their performance directly influences the performance of the global economy and become very important and actual problem for more detailed investigation. The prior research in the area of banks' profitability and performance can be divided into two distinct categories. The first group of researches as D. Rasiah, J. Wilson, J. Goddard, P. Molyneux S. Dave and others focused primary on the internal factors that influence banks' profitability [1; 6; 7; 9; 15]. These depend solely on internal organizational environment of a bank and on effectiveness of management's decisions. For example D. Rasiah carried out a detailed analysis of various management effects on operational excellence and consequently enhanced profitability [15]. Another interesting study discovered how bank's size influences its performance. The authors verified the hypothesis that big banks experience economies of scale and enhance their profitability ratios [9]. Also recently academics and professionals started to emphasize that intangible assets play a crucial role in determining performance in banking industry [6]

The second group takes more holistic approach and tries to analyze how economic environment impinges upon financial performance of financial institutions in particular commercial banks. One of the first such comprehensive studies was carried out by P. Bourke and is now extensively referenced by scholars in the area [3]. In addition to this S. Claes-

sens and L. Laeven recently carried out an interesting study on industry structure and in particular competition effects on banks' profitability in 50 countries around the world [5]. Despite the significant number scientific and practical investigations the actuality of the problems concerning the search of new approaches of performance estimation of banking industries and identification of the determinants, which influence this process still need more deep investigation.

The aim and tasks of the research. Therefore, the aim of this paper is to analyze and combine best practices of accessing performance of banking industries around the world and use them to define both internal and external determinants of Ukrainian commercial banks' profitability. To reach this aim the several tasks should be solve, including identification of the ways of measuring banks' profitability, analysis of the main tendencies in Ukrainian banking system and estimation of the more important determinants of Ukrainian banks' profitability based on econometric modeling.

The main results of the research. The ultimate goal of company management is to make their companies more valuable and maximize shareholders' wealth. There are various methods of measuring financial performance of a company. Both common accounting magnitudes, such as operating income, earnings before interest, taxes, depreciation and amortization (EBITDA), net income and financial statements ratios, such as profit margin, return on assets (ROA), return on equity (ROE) are widely used by financial analysts to provide stakeholders with important information on its performance. The question that arises is whether these classical methods, usually applied to measuring profitability of regular companies, can be also used to determine profitability levels of financial institutions, in particular commercial banks.

Table 1. Different measures of financial performance

Traditional measures of performance	
return on assets = net income/average total assets	Represents the amount of money generated by an entity for the given amount of assets over one year
return on equity = net income/average total equity	Represents the amount of money generated by an entity for the given amount of equity over one year
cost-to-income ratio = operating expenses/operating income	Shows the ability of a financial institution to generate profit from a given amount of revenues
net interest margin = net interest income/assets	Represents the income generation capacity of a bank from its main activities
Economic measures of performance	
economic value added = return on invested funds – (weighted average cost of capital * invested capital) – (weighted average cost of debt * net debt)	Shows the opportunity cost of investing into bank's equity for stockholders (developed by Stern and Stewart in 1991)
risk adjusted return on capital = (revenue – expected expenses – expected loss – income from capital)/capital	Return on capital ratio adjusted to the amount of risk involved, popularized by Bankers Trust in 1980s
Market-based measures of performance	
total share return = (dividends + increase of stock value)/market stock price	Represents how a capital market values profitability potential of a given entity
price-earnings ratio = market stock price/earnings per share	Represents the ratio of financial results of an entity to its market stock price
price-to-book value = market stock price/book stock value	Represents by how much the market value of an entity is higher by equity's book value
credit default swap	Indicates the cost of insurance of an unsecured loan for a financial institution over a given period of time

As commercial banks are at the core of global financial system and their success means success of the global economy, sophisticated techniques of measuring their financial performance need to be developed. Performance of financial institutions in this research is defined as the potential to generate high profits.

Depending on the nature of a stakeholder different methods are used to access banks' performance. All indicators can be divided into three distinct categories, widely used by academic and business representatives. Some of the most important of them are outlined in table 1.

The first category of financial institutions performance indicators represented in the table 1, includes traditional measures. These measures are very similar to those used by financial analysts over viewing regular non-financial companies. Among those outlined in the table ROE, cost-to-income and net interest margin are the most widely used by bank analysts. Second category, economic measures of performance focus on efficient use of bank's assets and usually require a lot of information in order to be properly calculated. Such indicators as economic value added (EVA) or return on risk-adjusted capital (RORAC) aim at identifying the economic results generated from bank's assets during any given fiscal year.

Finally, the market-based performance measures indicate how financial markets value any particular firm, usually compared with their accounting or book value [10].

It's necessary to mentioned that recent events, such as global financial crisis of 2008 and the EU debt crisis show that most common indicator of banks financial performance ROE is very limited. High ROE ratios may represent effective management and strong investor returns on one hand, as well as dangerous unsustainability of a bank on the other. To better understand what comprises return on equity ratio and the problems associated with the indicator it is useful to break it down into three components according to the Dupont identity [16, p. 59–69].

$$ROE_t = \frac{NI_t}{R_t} \times \frac{R_t}{TA_t} \times \frac{TA_t}{TE_t}, \quad (1)$$

where ROE_t – return on equity in period t ; NI_t – net income of an entity in period t ; R_t – total revenues of an entity in period t ; TA_t – total assets of an entity in period t ; TE_t – total equity of an entity in period t . So, according to the formula (1) ROE can be decomposed into profit margin, assets turnover and leverage components. During the financial crisis of 2008 both the profit margin and assets turnover ratios decreased significantly for major banks, however the leverage component remained high. This mitigated the ROE deterioration and created an illusion of high performance of the banks [4; 16].

On the other hand ROA seems to be a bit more stable and reliable indicator than ROE, as according to Formula (2) it lacks the leverage component.

$$ROA_t = \frac{ROE_t}{TA_t / TE_t}, \quad (2)$$

where ROA_t – return on assets in period t .

However for major banks this indicator remained flat over a long period of time. It even has been rising steady for some banks since 2003. Thus ROA indicator also proves to be very limited [4].

As showed deep analysis, issues with omitting risk, myopic view on strategy and data disclosure and financial reporting prove that traditional performance measures alone should not be relied on. In order to perform more comprehensive and deep-looking performance analysis of a financial institution more wide ratios, qualitative indicators and some alternative methods such as balanced score-board should be used along with the traditional metrics. From the analysis done it is clear that the more comprehensive framework should place particular focus on such issues as efficiency, asset quality and capital adequacy.

First of all, the importance of risk-adjusted measures should be take into account. One way to do this would be to focus not only on the plain return ratios but also on the risk-adjusted return ratios. The more holistic use of RAROC would solve the problem. These coefficients allow allocating bank capital to business units in accord with their corresponding economic value added. The problem that remains is that these indicators heavily rely on internal bank data and on assumptions, which makes them very difficult to calculate [12].

The second important set of alternative performance measures concerns asset quality. Traditional performance measures are not comprehensive enough to acknowledge the modern complexity of accounting methods and assets classification. Therefor analysts and bankers use various qualitative methods, such as migration matrices and stress tests in order to project future potential loss from different portfolios in banks' assets. Such holistic approaches help to assess asset quality and the reliability of corresponding future cash flows.

Another issue deals with the capital adequacy in relation to its assets. During the crisis of 2008 the traditional performance measures were negligent to give appropriate risk-adjusted value to all assets owned by a bank, in particular to some credit-risk bearing assets, such as collateralized debt obligations (CDO). It resulted in banks having strong total assets to equity ratios and strong capital ratios. Some specialists believe that the problem can be dealt with if tangible equity is used instead of total equity and bigger attention is paid to off-balance sheet activities, such as operating lease. Thus such performance assessment measures could bring more market analysts' attention to the adequacy of capital structure of a bank in the correspondence with its assets. It should be pointed out

that in order to make a broad assessment of off-balance sheet assets comprehensive qualitative methods should be used, as numerical measures are useless at this stage [4].

The next important alternative method of assessing bank performance is a detailed analysis of earnings structure. During such analysis the emphasis should be placed on the low vulnerability and high sustainability of bank earnings. Unreasonably high earnings in a short-run signal about high risks, which in turn puts in great risk future performance of a bank. In order to assess the low volatility of earnings and strong sustainable development, analysts should focus on breaking down revenues into its component parts and analyze different revenue streams and the degree of product diversification of a bank. Currently too much attention is paid to the ratio of net interest income in total revenues, as net interest income is proved to be much less volatile than non-interest activities of a bank.

Another issue concerning bank's performance measures deals with liquidity. The crisis experience showed the crucial importance of strong liquidity ratios to bank's sustainability. This means that for a comprehensive assessment of bank's performance such ratios as loans to deposits and short-term funding to long-term funding should be closely analyzed [4].

The next important part of alternative bank's performance measures concerns the valuation of intangible assets. Commercial banking is a very knowledge-intense industry with intangible assets playing a crucial role in banks' performance. Thus non-financial performance assessment measures should be used in order to evaluate intangible part of banking business. Such factors as brand name, human capital, customer service all should be accounted for as they impinge upon banks' performance significantly [6; 14]. The above-mentioned factors should be combined for the development of a comprehensive performance measurement framework, which takes into account traditional measurement methods, as well as non-traditional, such as economic, risk-adjusted measures and non-financial indicators [11].

In other words such measurement framework deals with assessing the business model of a bank as a whole and evaluates the ability to generate stable revenue of every business unit from the standpoint of various business dimensions, such as margin, turnover and leverage. This means decomposition of traditional indicators such as ROE and closer scrutiny of each of its component parts. For instance, profit margin needs to be calculated separately for each revenue stream. Moreover

revenue from banking activities share must be compared to revenue from nonbanking activities. Leverage is assessed from the risk-adjusted standpoint and with additional capital-adequacy indicators. At the same time, the off-balance sheet assets should be analyzed with the relation to corresponding capital streams. Asset turn over ratio should also be split into components to include off-balance sheet activities and decomposed revenue streams. In table 2 the key elements of comprehensive framework used for assessing bank's performance during such challenging economic times are described.

tion was held in Ukraine in a given period; if equals zero neither presidential nor parliament election was held in Ukraine in a given period; X_{6it} – dummy variable; if equals one, the global financial crisis effects were the strongest in a given period $c, \alpha_i, \beta_1, \dots, \beta_6$ – unknown parameters that need to be estimated; ε_{it} – regression error term.

Econometric model (3) belongs to the class of the panel data models. The diagnostics, including Hausman test proved that model (3) should be used in analysis as random effects regression model for profitability ratios analysis [13]. In order to perform the research, historic data on operations of 47 major

Table 2. Key elements of a comprehensive framework for measuring banks' profitability

Traditional indicators (ROE) decomposition			
Turnover	Leverage		Margin
	Off-balance sheet	On-balance sheet	
Loans flow/ Loans stock		Loan stock/Total assets	Commissions/ AUM flows
Assets under management (AUM) flow/AUM stock	AUM stock/Total assets		Net trading income/ Turnover portfolio
Turnover portfolio/ Trading portfolio		Trading portfolio/ Total assets	Interest margin/Loans stock

Finally, banks' management should combine resources with market analysts in order to perform stress tests, sensitivity and what-if analysis in order to evaluate the sustainability and potential of banks' profitability across the entire key dimensions

To estimate the influence the management effects, size, geographical effects and other factors on commercial banks performance indicators the panel data models has been build in following general form:

$$Y_{it} = c + \alpha_i + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \dots + \beta_6 X_{6it} + \varepsilon_{it} \quad (3)$$

where Y_{it} – one of the defined comprehensive profitability ratios, defining the performance of the commercial bank i in period t (including net income to equity ratio or ROE; EBIT to equity ratio; operating revenue to assets ratio; ROA; net income to operating revenue profitability ratio); $i = 1, k; t = 1, T$; X_{1it} – independent variable that equals to total interest income for a bank i divided per total loans in a given period t ; X_{2it} – independent variable that equals to total interest expense for a bank i divided per total deposits in a given period t ; X_{3it} – independent variable that equals to total equity divided by total assets for a bank i in a given period t ; X_{4it} – dummy variable; if equals one, a bank belongs to the first category of commercial banks defined by the National Bank of Ukraine; if equals zero, it belongs to the second category; X_{5it} – dummy variable; if equals one, either presidential or parliament elec-

Ukrainian commercial banks has been collected over the period from 2007 to 2013. The results of estimation of the model (3) on the real data set for the dependent variable net income to equity ratio or ROE are as follow (in parentheses the standard errors of coefficients are given):

$$Y_{it} = 0.41 + \alpha_i + 0.91X_{1it} - 3.81X_{2it} - 0.34X_{3it} - 0.32X_{4it} - 0.08X_{5it} - 0.11X_{6it} \quad (4)$$

(0.12) (0.52) (0.84) (0.63) (0.12) (0.05) (0.08)

We should say that for economy of the place the estimated values of the individual constants (α_i) are not indicated. As it was discussed, despite its flaws ROE remains one of the most widely used traditional performance measures for banks. As it can be conclude from analysis of the results of estimation of this model that it returned two statistically significant variables on the 5 % interval, interest expenses to deposits and group variables, and one statistically significant variable on the 10 % interval, interest income to loans variable. Consequently the regression coefficients results can be interpreted as follows. If the interest income to loans ratio increases by 1 % the net income to equity or ROE ratio increases by 0.91 %. When interest expenses to deposits ratio increases by 1 % ROE decreases by 3.81 %. Finally, if a commercial bank belongs to the first group its ROE ratio is by 0.32 % lower than for the second group bank.

The similar calculations has been done with the other measure of profitability, including EBIT to equity ratio; operating revenue to assets ratio; ROA

and net income to operating revenue profitability ratio. The last particular indicator helps to measure the importance of non-primary activities of a bank on its performance. The higher the ratio is the more profit a bank gets from primary activities.

The estimated regression models helped to identify what factors have the biggest impact on bank's performance measures. It shows that interest expenses to deposits ratio, interest income to loans ratio and the size of a bank have a particularly strong impact on its financial performance. Moreover leverage ratio and the state of economy also influence banks' performance. On the other hand such political factors as election, that were assumed to be very important in Ukraine, were proven to not have strong influence on banks' profitability.

Conclusions. Banking executives around the world and in Ukraine need to focus not only on improving traditional performance indicators, but also on enhancing long-term sustainable performance of their organizations.

In terms of short-term success and enhancing traditional indicators, such as ROE, ROA and different profit margins, management needs to focus on return on loans and cost of capital (deposits) the most. Cost efficiency overall, which larger Ukrainian banks have problems with, should also be taken into account. As for enhancing long-term success, initiatives that refine corporate governance lie in center of such improvements. Management compensation, effective boards, intangible assets and dividend policy all prove to be equally important. Based on the statistical analysis of major Ukrainian

commercial banks we identified that in order to maintain high profitability and strong traditional performance indicators executives should focus on the efficacy of their core banking activities. Small banks with quality assets structure and relatively cheap capital sources show the best results. On the other hand big banks, focused on quick expansion strategy do not pay enough attention to the quality and riskiness of their assets and capital sources and pay for it with lower profitability levels. The results of panel data econometric analysis revealed that interest expenses to deposits ratio, interest income to loans ratio and the size of a bank have a particularly strong impact on banks' profitability levels. In addition to this leverage ratio and the state of economy also impinge upon banks' financial performance. On the other hand such factors as presidential and parliament elections, political instability and location of banks' headquarters, were proven not to influence banks' profitability.

Finally, in order to enhance core traditional profitability metrics banks need to develop clear business models and access with a great care the quality of their assets and capital. The risk factor should always be taken into account with each venture and every client. On the other hand to ensure long-term success of banking system and consequently of global economy, banks' executives around the world need to redefine corporate governance issues. In order to create modern, stable and prosperous financial system banks' managers need to implement key initiatives from compensation strategy to boards' roles.

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Токарчук В. В.

СУЧАСНІ ПІДХОДИ ДО ОЦІНЮВАННЯ ЕФЕКТИВНОСТІ ДІЯЛЬНОСТІ КОМЕРЦІЙНИХ БАНКІВ УКРАЇНИ

У статті проведено порівняльний аналіз класичних та сучасних підходів до оцінювання ефективності діяльності комерційних банків. На основі побудови моделі лонгітюдних даних визначено та кількісно оцінено вплив основних факторів на ключові індикатори прибутковості та ефективності діяльності банків, запропоновано напрями стимулювання ефективності їх діяльності на довгострокову перспективу.

Ключові слова: оцінка доходності, ефективність, комерційний банк, економетрична модель, прибуток на власний капітал, індикатори.

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A. Volkotrub, N. Ivanova

HIGHER EDUCATION MARKET IN UKRAINE

The article analyses key features of how the higher education market develops in Ukraine. In order to cover the topic on a large scale, we have defined the terms of education service and service differentiation. The analysis of market structure gives reasons for stating that the higher education market in Ukraine acts under the conditions of monopolistic competition.

Keywords: higher education market, education service, service differentiation, monopolistic competition, higher educational establishment.

The actual features of market development concerning the higher education indicates that currently it goes through the integration of market mechanisms. Since 2009, it has faced a trend of market players' quantity reduction. During the last 5 years the number of higher educational establishments with III-IV accreditation level has reduced by 5,3 per cent, the number of students has reduced by 22,8 per cent [1]. The principal competitors of Ukrainian higher educational establishments (HEE) are foreign HEE and online education programmes. The

education abroad gets ever more popular due to education costs (in most cases it does not cost more than in Ukraine), and the opportunities of cost-free education. The outcoming flow of students is mainly restrained by the requirements to foreign language skills and the necessity to pass additional exams. Also the interest to online education grows persistently, as it gives students an opportunity to get a foreign diploma without leaving the homeland. Such a situation has resulted in an increase of competition between higher educational establishments