РАЗДЕЛ 2
КОРПОРАТИВАЯ СОЦИАЛЬНАЯ ОТВЕТСТВЕННОСТЬ И КОРПОРАТИВНОЕ УПРАВЛЕНИЕ

SECTION 2
CORPORATE SOCIAL RESPONSIBILITY AND CORPORATE GOVERNANCE

EMPIRICAL STUDY ON THE CORRELATION OF CORPORATE SOCIAL RESPONSIBILITY WITH THE BANKS EFFICIENCY AND STABILITY

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Abstract

The aim of this paper is to investigate the relationship between the concept of corporate social responsibility and the most important characteristics of banking – the efficiency and stability in a sample of twelve Ukrainian banks, which are the biggest banks in Ukraine according to the classification of the National Bank of Ukraine (NBU). Our research covers the period from 2006 to 2012. Based on the literature review we construct two main hypothesis related to the impact on the corporate social responsibility concept (CSR) of the following independent variables: 1 – efficiency (as a short term period characteristics of banking), 2 – stability (as a long term characteristics of banking).

Keywords: Bank, Corporate Social Responsibility, Efficiency, Stability, Sustainable Development

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1. Introduction

The extension of the CSR concept in the developed countries ensures its effective implementation in the developing countries, leading to an increased level of responsibility of business entities for the consequences of their activity. The social responsibility in banking is realized in the following aspects: the provision of the society's sustainable development, ethical and transparent way of doing business, staff loyalty, environment protection (banks could be the participants of the "Green Office" initiative), the establishment of communication and realization of the stakeholders' interests.

The CSR is one of the most important instruments of ensuring a country's sustainable development in general and individual business entities in particular. The CSR is an integral element and a key instrument of the concept of the society's sustainable development declared by such international organizations as the World Bank, the United Nations, the European Commission: Research & Innovation – Sustainable Development) etc.

The paradigm of sustainable development is based on the Triple Bottom Line (TBL) approach –

sustainable development is determined through the identification of the influence of a company on the country's development in the context of its shareholder value (economic value), social and ecological capital (social and ecological value). These are the most important parameters for the development of any company.

In the context of social and environmental projects banks have an indirect impact on the society and the environment through the mechanism of their customers financing. The main business practices of banks in these areas are:

- social and environmental risk assessment in the sphere of finance;
- responsible lending;
- creation of a fund for the financing of social and environmental projects;
- projects of environmental safety;
- socio-ecological criterion as a key factor in the selection of customers;
- disclosure of information about the social and environmental activities, information security projects.

Most of these practices of socially responsible businesses are actively used in countries in which banks have been stably operating for a long time. Therefore, the biggest problem for Ukraine is to ensure the financial stability of banks in the context of their strategic development and the efficiency of banks' performance in the context of their social initiatives policies.

The research of the relationship between the CSR and the financial performance of business entities (including banks) is a key scientific problem that has been described in many fundamental research papers. The authors of these works include such scientists as McGuire J., Sundgren A., Schneeweis T. (McGuire, J., Sundgren, A., Schneeweis, T., 1988), McWilliams A., Siegel D. (McWilliams, A., Siegel, D., 2000), Waddock S., Samuel B. (Waddock, S., Samuel, B., 1997), Cochran P., Wood R. (Cochran, P., Wood, R., 1984), Orlitzky M., Schmidt F. and Rynes S. (Orlitzky, M., Schmidt, F., Rynes, S., 2003), Aupperle K. E., Carroll A. B., Hatfield J. D. (Aupperle, K. E., Carroll, A. B., Hatfield, J. D., 1985), Moskowitz M. (Moskowitz, M., 1972), Alexander G. J.and Buchholz R. A. (Alexander, G. J., Buchholz, R. A., 1978). All these papers indicate the existence of the positive, negative or neutral correlation between the CSR and the financial performance. The key indicators of the positive correlation are ROA, ROE, ROI, market share, etc. (Roman R., Hayibor S., Agle B., 1999; Ullmann A., 1985). The key indicators of the negative or neutral correlation between the CSR and the financial performance are the profits and the amount of dividends. (Alexander, G. J., Buchholz, R. A., 1978).

In our research we study the correlation between the CSR and two most important bank characteristics such as effectiveness and stability of Ukrainian banks. We also distinguish a short-term and long-term banking activity. In the second part of the paper we present the characteristics of the theoretical model and our hypotheses, the characteristics of the efficiency and stability indicators, as well as the general description of the correlation between the CSR and the stakeholder approach in the context of sustainable development. The third part of the paper describes the data set and the variables. In the fourth part we present the methods adopted in the econometric analysis, the results and their implications. In the final fifth part we present the conclusions and perspectives for the future research.

2. Theoretical framework and hypotheses

Among the existing scientific studies concerning the efficiency of banks under the influence of the CSR the research of Keffas G and Olulu-Briggs O. (Keffas, G., Olulu-Briggs, O., 2011) is especially important. This scientific work is devoted to the study of bank efficiency. The researchers have discovered a definite correlation between the CSR and the financial performance of banks in the USA, the UK and Japan. All banks in the study were divided into two groups: in the first group banks declare the presence of corporate social responsibility; in the second group of banks the corporate social responsibility is absent. The authors note that sustainable banks (those that implement corporate social responsibility) have a better capital adequacy, but a lower rate of return than banks which do not spend money on social programs. Confirming the hypothesis about the close positive correlation between the corporate social responsibility and the financial performance the researchers emphasize that, in spite of the significant reduction in liquidity of socially responsible banks, the implementation of social programs helps them accumulate competitive advantages in the long-term perspective.

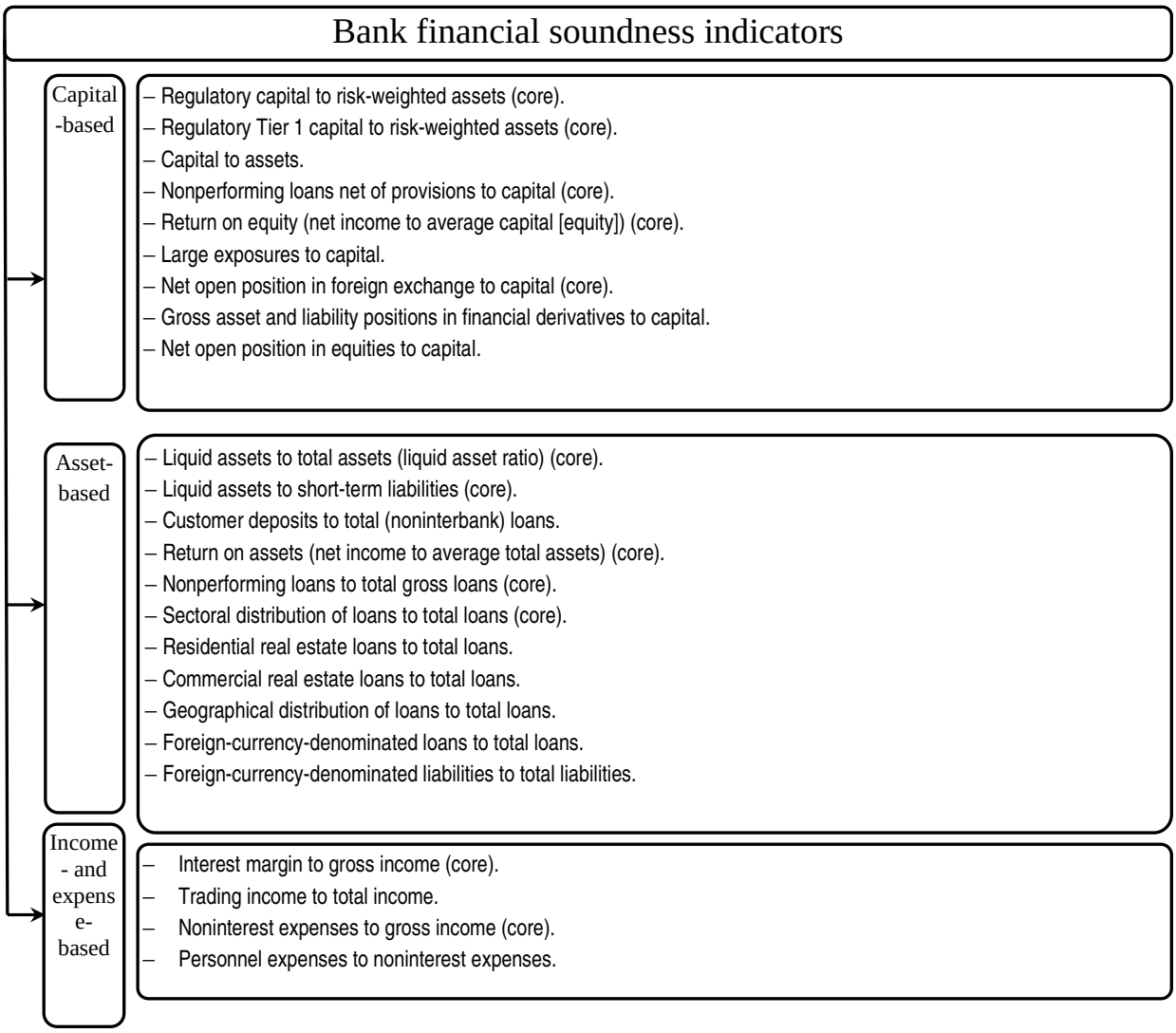
In accordance with the analytical papers of the International Monetary Fund the key indicators of the financial stability of banks are shown in figure 1.

Based on the data of Fig. 1 it's necessary to underline that these indicators make it possible to identify the level of bank stability from the financial perspective - the possibility to repay ones' obligations in time, to absorb and hedge the risks of deposits outflow etc. In the context of the corporate social responsibility concept and implementation of the stakeholder approach it would be reasonable to

expand the list of bank financial stability indicators recommended by the IMF. It is caused by the fact that the list of indicators presented in figure 1 makes it possible to assess only the financial stability of a bank ignoring such important elements of the sustainable development concept as social and ecological ones.

It is necessary to note that stakeholders' interests may vary depending on the duration of cooperation with a bank: most stakeholders are interested in a stable income at a sufficient level in the short-term period whereas in the long-term period they tend to consider their social status, the career growth, stable development of the bank leading to an increase in the society's well-being. Therefore, in the long-term perspective the key stakeholder interests include non-material values. The main indicator of stakeholders' interests in the long-term period is bank stability whereas in the short-term period it is efficiency.

Figure 1. Bank financial soundness indicators recommended by International Monetary Fund (IMF, 2006)



Thus, we offer the following hypotheses:

Hypothesis 1: CSR has a positive impact on the efficiency of banking activity.

Hypothesis 2: CSR has a positive impact on bank stability.

It is necessary to emphasize that the verification of this hypothesis is possible only on the basis of the bank financial stability indicators, whereas the calculation of indicators of the social and ecological aspects of banking activity is impossible due to the lack of specific data for such expenses.

Hypothesis 3: There is a time lag in the impact of the CSR measures on the bank's financial stability.

3. Methodology, data description and variables

The methodology of assessment of the banking business efficiency could be presented by the next groups of methods (Khailuk S. O., Melnyk T. M., 2010): coefficient method (traditional method); parametric methods (econometric analysis); non-parametric methods (mathematics programming); rating methods; analytical methods (DuPont model); value-based methods (for example EVA® - economic value added). The change in the paradigm of the banking business, the implementation of social aspects in its activities, the development of scientific approaches towards the assessment of efficiency require the use of both traditional and more modern advanced methods allowing to make sound conclusions about the efficiency of the banking business.

Parametric and non-parametric methods differ by the functional level of efficiency, the presence of a random variable and the nature of its distribution, as well as the instruments for the comparative assessment of the research objects.

A critical review of theoretical approaches towards the assessment of the level of the banking activity efficiency allows identifying the most appropriate group of methods for the research. In our view, parametric methods are more suitable considering the possibility to identify the divergence in the levels of efficiency / stability of banking activity in the whole sampling. The specific feature of this group of methods is the identification of the most effective bank in the whole sampling and comparison of its efficiency level with other banks. In our opinion, none of the banks in the sampling is absolutely efficient and stable, which made us choose the stochastic frontier approach (SFA) as the most appropriate method. According to this method, we construct a conditional bank with 100% efficiency / stability level and determine the impact of factors on the performance results of every bank. The indicator of the lost efficiency / stability is determined this way.

To confirm or refute hypothesis 1 we should determine the key quantitative indicator of the bank efficiency such as bank profit. According to the theory of financial intermediation the main goal of the banking business is to make a profit. Considering the CSR concept it is worth mentioning that in the process of the bank efficiency estimation the productive approach is acceptable while it doesn't contradict the stakeholder approach and the principles of socially responsible business determining the possibility of expanding the range of social initiatives by the bank.

To confirm or refute hypothesis 2 we will use the empirical studies of foreign scientists (Roy A.D., 1952; Čihák M., 2006; Boyd J. H. and Runkle D. E., 1993; Maechler A., Srobona M. and Worrell DeLisle, 2005; Schaeck K., Čihák M. and Wolfe S., 2006) and official documents of the IMF, where the composite indicator $Zscore$ was identified as a bank stability indicator. $Zscore$ indicator was proposed by Roy A. D. (Roy A.D., 1952). It determines the probability of bankruptcy (insolvency) of the bank. $Zscore$ is calculated with the following formula (1):

$$Zscore_{it} = \left(EA_{it} + \overline{ROA}_{it}\right) \Big/ \sqrt{Var(ROA_{it})} \quad (1)$$

where, $Zscore_{it}$ – stability indicator of bank *i* in period *t*;

EA_{it} – correlation between equity capital of bank *i* and its total assets in period *t;*

$\overline{ROA}_{it}$ – mean value of return on assets of bank *i* in period *t;*

$Var(ROA_{it})$ – variance of ROA of bank *i* in period *t.*

The increase in the value of $Zscore$ is indicative of an increased stability of the bank, whereas its reduction means an increased probability of the bank's failure.

We use hypothesis 1 to formalize the economic-mathematical model.

The objects of the economic-mathematical model for the assessment of correlation between the CSR and bank efficiency are twelve Ukrainian banks, which are the biggest ones in Ukraine according to the NBU classification: Public Joint Stock Company "Privatebank", Joint-stock company "Oschadbank", Public Joint Stock Company "Raiffeisen Bank Aval", Public Joint Stock Company "FUIB", Public Joint Stock Company "UkrSibbank", Public Joint Stock Company "Nadra", Public Joint Stock Company

"Finance and Credit Bank", Public Joint Stock Company "Brokbiznesbank", Joint Stock Company "OTPbank", Public Joint Stock Company "Ukrhasbank", Public Joint Stock Company "Alfabank".

The selection of the study objects is conditioned by:

- the constant presence within the first group according to the NBU classification (banks – market makers);
- the high level of bank transparency;
- the fulfillment of conditions of the economic-mathematical model such as homogeneity and comparability of the panel data structure;
- the possibility to compare the efficiency of CSR banks and non-CSR banks (JSC "Oschadbank", JSC "OTPbank", PJSC "Ukrhasbank").

The objective function of the efficiency model is represented as a profit before tax (formula 2), which allows to take into account not only the interests of business owners (as with the use of net profit variable), but also other stakeholders, including staff (timely and adequate salaries), government (the size of tax revenue) and others (Battese G., Coelli T., 1995; Berger A., Humphrey D., 1997; Buriak, A. 2012).

$$OP_i = f(\mu; Z_i) + t_i - r_i \quad (2)$$

where OP_i – profit before tax of bank *i*;

μ – the group of resultant variables;

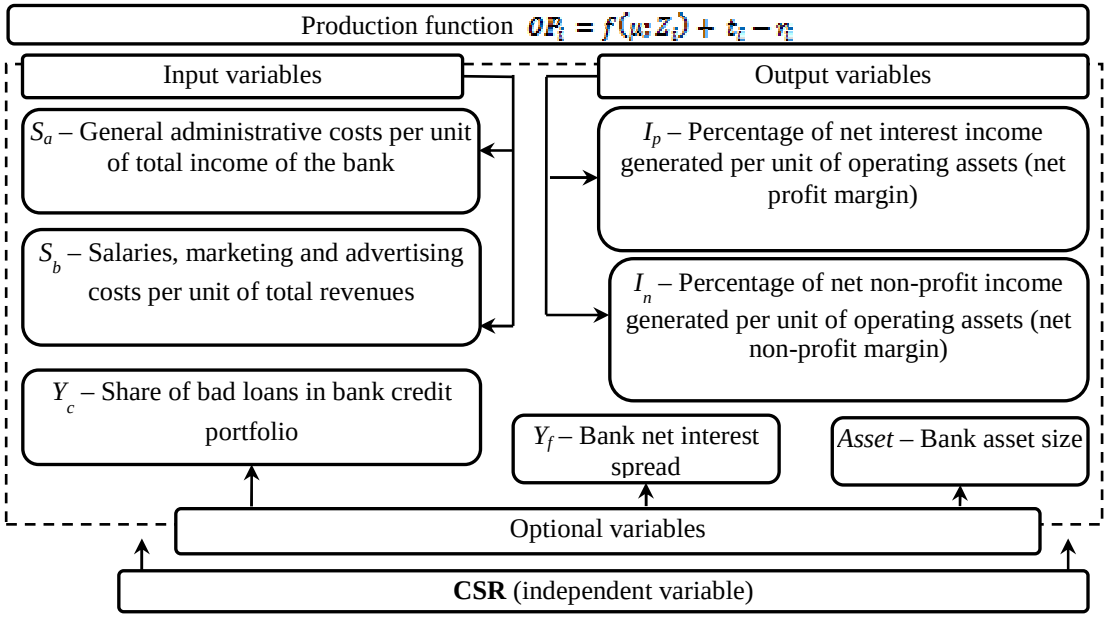
Z_i – the group of direct impact variables on the activity of bank *i*;

t_i – statistical error;

r_i – inefficiency indicator (shows the influence of indirect factors on bank activities and calculated on the basis of the truncated distribution law).

The input, output and optional variables are the information background of the model, enabling the bank to act as a financial intermediary and make profits. The parameters for the calculation of efficiency were studied in the paper of Buriak A. (Buriak A. V., 2012) and used to modify the SFA method in the context of the banking business. At the same time, in our research the CSR parameter was included into the modified SFA method as an independent variable which helps to determine the correlation between the efficiency of bank business and its corporate social responsibility (figure 2).

Figure 2. Input and output parameters of the model for the estimation of the banking business efficiency



The data collection process covers the period from 2007 til 2012.

The SFA method involves the application of the FRONTIER Version 4.1 software for evaluating the effectiveness of the banking business. This software uses the maximum likelihood method for estimating the model's variables.

One of the model's characteristics is the use of the translog production function which makes it possible to assess the impact of various factors on the bank efficiency (formula 3):

$$\ln\left(\frac{OPit}{Asset_{it}}\right) =$$
$$\mu_0 + \sum_{p=1}^{2}\mu_1 \ln(I_{pit}) + \sum_{n=1}^{2}\mu_2 \ln(I_{nit}) + \sum_{a=1}^{2}\mu_3 \ln(S_{ait}) +$$
$$\sum_{b=1}^{2}\mu_4 \ln(S_{bit}) +$$
$$\sum_{c=1}^{2}\mu_5 \ln(Y_{cit}) + \sum_{f=1}^{2}\mu_6 \ln(Y_{fit}) + \frac{1}{2}\sum_{p=1}^{2}\mu_7 \ln(I_{pit}) * \ln(I_{pit}) +$$
$$\frac{1}{2}\sum_{n=1}^{2}\mu_8 \ln(I_{nit}) * \ln(I_{nit}) + \frac{1}{2}\sum_{a=1}^{2}\mu_9 \ln(S_{ait}) * \ln(S_{ait}) +$$
$$\frac{1}{2}\sum_{b=1}^{2}\mu_{10} \ln(S_{bit}) * \ln(S_{bit}) + \frac{1}{2}\sum_{f=1}^{2}\mu_{11} \ln(Y_{fit}) * \ln(Y_{fit}) +$$
$$\frac{1}{2}\sum_{c=1}^{2}\mu_{12} \ln(Y_{cit}) * \ln(Y_{cit}) + \frac{1}{2}\sum_{p=1}^{2}\sum_{n=1}^{2}\ln(I_{nit})\mu_{13} \ln(I_{pit}) *$$
$$\ln(I_{nit}) + \ldots + \sum_{0=1}^{3}\partial_0 q_{0t} + \ln(t_{it}) - \ln(r_{it}) \quad (3)$$

where q_{ot}– quarterly dummy variable.

As seen in formula 3, added to the model was a dummy variable that identifies the corresponding quarter (q_{ot}). This parameter makes it possible to consider the seasonal factor inherent to banking, which significantly affects banks performance.

There are only two alternatives of applying the CSR concept in banks - to implement or not implement social aspects in their activities. Therefore, in our opinion, the binary method is the best instrument to make the CSR results comparable with the SFA model. So, the bank which uses CSR receives 1, if not – 0 (formula 4).

$$CSR = \begin{cases} 0, if\ a\ bank\ does\ not\ implement\ the\ CSR\ concept \\ 1, if\ bank\ implements\ the\ CSR\ concept \end{cases} \quad (4)$$

4. Results

The results of practical testing of the model regarding the correlation between the CSR and bank efficiency and stability are presented in table 1.

Table 1. The results of practical testing of the model regarding the correlation between the CSR and bank efficiency (fragment)

Independent variables	Coefficient	Standard error	T-ratio
Confidence interval 5%			
CSR_{H1}	-1,5486	0,0074	-2,0677
Confidence interval 1%			
CSR_{H2}	-1,8451	0,3262	-5,6550

In our model we use the maximum likelihood method for estimating the translog production function (for H1 – profit before tax, for H2 – bank financial stability as a *Zscore*). The adequacy testing of the model is carried out by comparing the value of the log likelihood function with the Pearson's chi-squared test (likelihood ratio). According to the results of assessing the efficiency of the banking business under the impact of the CSR the value of the log likelihood function is -255,33, which does not exceed the Pearson's chi-squared ratio - 15,66. As for the hypothesis about the correlation between the CSR and bank financial stability, the value of the log likelihood function is -364,82<15,66. Therefore, both models are adequate.

The independent variable CSR_{H1} has a minus sign corresponding to its economical essence: the fewer social activities are implemented by the bank, the greater is its deviation from the reference level of efficiency, and the greater is the amount of the bank's lost earnings. Therefore, the hypothesis 1 is confirmed.

According to the Student t-distribution the independent variable CSR_{H2} is in the confidence interval of 1%. This suggests the importance of the correlation between the CSR concept and bank's stability, because the actual value of the Student's t-ratio exceeds the critical value (5,6550> 2,7500). The independent variable CSR_{H2} has a minus sign corresponding to its economical essence. The use of the modified stochastic frontier approach in the economic and mathematical model implies the necessity to identify the index of lost stability. Thus, the index of lost stability (deviation from the reference point of stability) based on the results of estimating the correlation between CSR and bank financial stability, is inversely proportional to the investments in social initiatives.

Therefore, the hypothesis of correlation between the CSR and financial stability is confirmed.

Hypothesis 3 put forward by our economic and mathematical model concerns the time lag in the impact of social programs on the financial stability of banks. To confirm or refute hypothesis 3 we should shift the input model parameters, especially, the indicators of the corporate social responsibility. The results of the hypothesis testing are presented in table 2.

Table 2. The results of testing of the time lag in the impact of the corporate social responsibility on the financial stability of banks

Hypothesis	Displacement of CSR data	Standard error (compared with a model without autocorrelation)	Model adequacy	Suggestion
CSR has influence on bank financial stability with time lag	one year	0,4418>0,3262	-295,47 >15,66	The hypothesis was not confirmed, the value of the standard error increases with autocorrelation, the value of the log likelihood function increases with the shift of data
	two years	0,6843>0,3262	-221,40 >15,66	
	three years	5,0004>0,3262	-149,85 >15,66	

5. Discussion and conclusion

The data analysis presented in table 2 demonstrates the absence of time lag in the corporate social responsibility that has an impact on the financial stability of banks, which is confirmed by the smaller value of standard error in identifying the correlation without the shift of CSR data. This suggests the necessity of a long-term strategy in implementing the social programs of banks ensuring the positive influence on the financial stability of banks on a yearly basis.

The model estimation results presented in tables 1, 2 confirm the foundations for the

implementation of the concept of corporate social responsibility – single one-time social actions do not have an economic value and do not influence the efficiency and stability of banks within long time periods. In other words, the implementation of the CSR measures in the current year does not affect the bank's financial position in the following year. Based on this conclusion, the CSR concept should have a long-term nature and be thoroughly planned in order to increase the efficiency of the bank's activity and its stability in general.

Summarizing the findings of this research the following conclusions can be made. The CSR concept can provide significant financial and nonfinancial advantages to banks in the contemporary competitive environment. There is a positive correlation between the CSR and the banking business efficiency which is one of the prerequisites for successful implementation of the social initiatives by banks. It should be emphasized that the results for banks that are not market-makers (second, third, fourth groups of the National bank of Ukraine classification) may differ from those received in the study. Recommendations for the full-scale implementation of the CSR concept should be given taking into account the bank's market share and its specific activity. However, every bank, represented by its decision-making body, should understand the level of its responsibility to society and contribute to its sustainable development. As a result, the study of the advantages of the CSR concept implementation in the banking industry as one of the fundamental elements of banks' development strategy is becoming increasingly important.

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