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Assessment of the efficiency of banks accepted in Tehran Stock Exchange using the data envelopment analysis technique

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CHRONICLE	Abstract
	The research provides a systematic method for assessing the financial performance of the banks. The analysis is based on a set of benchmarks related to the financial performance of the banks. In this regard, this research has explored a model for evaluating accepted banks in Tehran Stock Exchange using the data envelopment analysis method. The purpose of this research is to apply the research method. Also, the data collection method is a direct observation, interview and library method and a tool for collecting data from stock databases. The statistical population of this study is Tehran Stock Exchange member banks. Selection of inputs and outputs of this research has been done according to similar research. Inputs include public and administrative costs, income and output, including net profit. Also, according to the analysis done by the DEA models, it is selected for performance evaluation. Finally, the unit is either efficient or inefficient, and efficient units with The Anderson and Pearson models were ranked and eventually the Bank of Pasargad and the Gwain Bank ranked.

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Introduction

Any process that takes place requires the use of a series of data and resources and, naturally, a series of achievements and products. The importance and importance of evaluating the efficiency and effectiveness of the reflection and the effects of the activities performed is especially important. That strategic planning and performance-based goals and policies are at the heart of the heart. The banking system of the country is also required to evaluate its performance in order to survive and compete in this field, considering the issue of joining the WTO and the entry of foreign banks, starting private banks and increasing the scope of financial and credit institutions. It is diligent in its growth and prosperity and will take the necessary measures to compensate for the disadvantages of its branches.

Considering the very important roles that are nowadays considered for banks, the issue of efficiency and productivity, and its measurement in the banks of the country, is a new debate that seeks to shape them in our growing and changing society. Basically, measurement of efficiency and productivity in our country has been studied and evaluated mainly in the economic enterprises. Fortunately, good time for entry in this field has been provided in our country. Since banks are different in terms of their nature and type of work with single-purpose agricultural and industrial organizations, different methods should be used, therefore, appropriate methods should be used by multi-purpose organizations. ((Shirahang, 1998

The subject of this research is to evaluate the efficiency of Tehran Stock Exchange banks. Since the existing methods of assessing and measuring the performance of bank units are often empirical and without scientific support, as well as due to the non-standardization of these methods, their results can not be used in other banks. In this study, to evaluate the efficiency and efficiency of companies The stock exchange is utilized in a scientific approach called data envelopment analysis. The Data Envelopment Analysis was first proposed by Charens in 1978 and introduced as the CCR Model. Data Envelopment Analysis is a powerful tool for evaluating the performance of organizations in their relative performance conditions. . ((Mehregan, 1383

Considering that banks are almost similar in terms of structure and each bank has the same executive functions and during certain operations, they provide a specific output using certain inputs, therefore, they must be characterized by suitable criteria for determining their efficiency. Each of the banks has used for each level their outputs, levels of institutions, and thus their efficiency in the use of their limited resources, or vice versa, in output generation. Thus, by measuring the relative efficiency of each unit and identifying inefficient units, and comparing the efficiency of these banks in several different periods, it can be seen that there is a positive or negative growth in productivity, and providing appropriate strategies to improve the performance of these banks.

The Tehran Stock Exchange was established in February 1966 on the basis of the law approved in May of 1345. The period of activity of the stock exchange can be divided into four periods: the first period (1356-1357), the second period (1358-1678), the third period (1383-1383) and the fourth period (from 1384 to now

The trend of the second half of 2004, under the influence of various domestic and foreign events, and the excessive increase of indices in the previous years, had a decreasing trend, and this trend was significant except for a short period from December to the end of the year. However,

since December 2005, the policies and efforts of the government and the stock exchange have slowed the downward trend in the stock-flow criteria. While the total index reached 9.459 at the end of 2005, it crossed 10,000 units during 2006 and eventually experienced 9,821 units at the end of the year. Also, a significant decrease in stock trading in 2005, due to the effective actions mentioned in 2006, reached a relative balance, so that the value of stock trading and priority in 2005 was about 56.529 billion rials and in 2006 equal to 55.645 billion rials . The number of listed companies in the stock market increased from 422 companies at the end of 2004 to 435 companies at the end of 2006. Among the banks accepted in the stock exchange are SADERAT BANK, PARSIAN BANK, PASARGAD BANK, IRAN ZAMBAN BANK, Development Bank, Post Bank of Iran, Sina Bank, New Economy Bank, Ansar Bank, Bank of Karafarin, Bank of Commerce, B Anak Mellat, Bank Di, Saman Bank, Future Bank, Tourism Bank and Capital Bank. It is natural that the efficiency of inefficient banks, while reducing the cost of services provided and preventing the loss of scarce resources, can be expected in this case National interests are more secured and the losses caused by inefficiency at the general level of banks will be minimized and ultimately the banking system of the country will be more efficient overall. Therefore, present evaluation can clarify the efficiency and inefficiency of the studied banks and make the necessary arrangements. To improve their performance. For this reason, it can be considered as a negligible contribution to the study of efficiency and productivity literature in the domestic banking system.

Material and methods

Scientific studies divided into three classes based on objective of study, including applied, research and development. According to how obtaining the data required by study, they could be also divided into two categories: descriptive study and test study. In the test study, there is investigated the cause and effect relation between two or a few variables. Descriptive study also includes a set of methods aiming to describe the conditions or events. Implementing the descriptive study is merely for higher recognizing the status quo or helping the decision making process (Sarmad et al, 2007),

According to what mentioned above, this study has applied objective and descriptive comparative according to data collection and is conducted based on logical and mathematical analyses.

a- Evaluating the efficiency by using DEA method;

b- Ranking the efficient branches by Anderson Peterson method.

Variables of the Study

Variables of this study have been selected according to their simplicity, perceiving the concept, being quantitative, accessibility of data, applicability and using the opinions of experts and consultants.

3-7-1- Standards for Selecting the Variables

Selective variables include variables applied for evaluating and determining the efficiency of studied companies. One of the most important cases considered in determining the input and output variables include financial statements and indices effective in the shares market. As statements and indices indicate the annual performance of decision-making units (companies) and data indicated in them is one of the most important information sources of users of financial data for decision making, therefore, the input and output variables have been selected for evaluating the

efficiency of companies from such statements and indices.

One of the main stages for doing this study is determining the inputs (input variables) and outputs (output variables) and must come with following specifications:

1- All inputs and outputs must be homogenous and with unique direction; on the other hand, inputs and outputs must be the same for whole institute. Unidirectional means inputs and outputs must change the efficiency in one direction. On the other hand, should any increase in the outputs may increase the efficiency, an undesirable output as if wastes must be such entered to the model that any increase in it may increase the efficiency.

2- All inputs and outputs must be calculated for a specific interval.

3- One of the limitations for selecting the inputs and outputs is that total variables may not exceed from a third of total decision making units.

According to above descriptions, for using DEA, it is necessary to classify the variables into two categories, "input" and "output" and in an operational definition of measure for such classification, the variables that companies will minimize it are considered as input and variables companies will maximize it are considered as outputs.

According to above descriptions, the calculation variables of this study is defined and classified as below:

Input indices: general costs, administrative and financial costs;

Output indices: sales and net profit

3-7-2- Definition of Input and Output Indices

Input and output indices defined as below:

3-7-2-1. Input Variables

Public Procurement Fees: This is part of the company's costs that are related to the entire unit of the dealer's unit to carry out the company's operations.

Results

Output Variables

1. Net Income: Income tax, after deduction of income tax.

2-Sale: Operating Income.

Definition of Decision Making Units (DMU)

A DMU is an institute turning the inputs to outputs. DMUs are units conducting the same type of duties with the same objectives and ideals. DMUs that are being used in DEA must be homogenous with the same inputs and outputs.

There are two essential guidelines for selecting DMUs:

1) Any DMU must be defined as an institute that is responsible for inputs used and outputs produced.

2) The number of inputs and outputs used in a study must be enough great (Rey, 2004).

4-3- *Introducing the Inputs and Outputs*

In this part, there are introduced inputs and outputs used for implementing DEA technique as well as how to calculate them for entering to the model.

Following table indicates inputs and outputs

4-4-14-5- *The ranking of effective units by Anderson Patterson*
Model

In the model CCR 4, the efficiency of the bank has been achieved. Using the Anderson-Patterson model, these four banks

Table 4-5- The efficiency based on AP model

were re-evaluated, with the results presented in Table (4-8).

RANKING	AP MODEL	name of the company	row
	.	New Economy Bank	
	.	Ansar Bank	
	.	Iran Bank of the Earth	
	.	Parsian Bank	
	.	Tejarat Bank	
	/	Bank of Wisdom Iranians	
	1/36	Middle East Bank	
	.	Bank di	
	.	Saman Bank	
	.	Sina Bank	
	.	Saderat bank	
	.	Bank of Ghwamin	
	.	Tourism Bank	
	.	Mellat Bank	
	1/12	Pasargad bank	
	.	Bank tat	
	.	Capital Bank	
	.	Bank for business	

Discussion

Also according to the BCC model, eight Pasargad banks, Parsian, Middle East and Sinai, Ghwamin Bank, Mellat, Entrepreneur and Iran Land have a performance of 1, which means, in terms of returns versus scale on the efficiency boundary, and the points that are on the border They do not have so-called inefficiencies. Also Ansar Bank with a performance of 1.63 and a new economy bank of 1.99 operate a bit short of efficiency, which is better than other banks.

According to Banking Performance Ratings, with the Anderson Pyotr Sung Bank, Pasargad Bank was the first bank to be recognized as the first efficient bank,

and Seps, respectively, Ansar, Middle East, Iran, Wisdom ranked second, third and fourth. Saman Bank and Qavamin are among the most inefficient banks. They are.

Conclusions

Given that there was an input and two outputs, the number of decision-making units should be at least 9, in which we analyzed 18 banks in the stock exchange. The inputs include general and administrative costs, and the output includes income and profit, which was done using the GAMS software, using CCR and BCC model inputs and outputs, and ranking the units, and the criterion of the CCR model was introduced. Then, we need to rank the effective units, which uses the Anderson Peterson model to rank effective units.

Based on the results obtained in the CCR model, two Pasargad Banks, the Middle East, have a performance of 1, and 16 other banks have less than one performance, which has been the least efficient for the SADERAT BANK.n.

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